IRON AGE

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DIGEST

of the week in metalworking

PAGE 71 — TIDE TURNING FOR RIVER TRANSPORTATION

More reliance will be put on river transportation of products and raw materials because of steadily rising overland freight rates and decentralization of industry. Old Man River is modernizing his hauling equipment and readying for a bigger job. New markets may open for steel producers.

PAGE 73 — BUSINESS DIP WORRIES GRAY IRON MEN

Growing competition and lowered levels of business activity were worrying members of the Gray Iron Founders Society meeting in Chicago last week. Order backlogs are falling off, price cutting is growing, and some foundries are operating 4 or 5 days a week. Some still saw record output.

PAGE 74 — USW SEEKS TO SIGN UP NON-MEMBERS

The 25,000 to 59,000 non-union production workers in plants under contract to the USW are a headache in many ways. Members deridingly call them free-riders. Campaigns to sign them up are expensive and the union wants dues it is missing. About 10 pct of eligible men are non-union.

PAGE 75 — MUSIC FOR INDUSTRY BATTLE SHAPING UP

A ding dong battle is shaping up in the industrial music field. Muzak Corp. is being challenged by Functional Music, Inc. The battle will be one of systems—music by wire or by FM radio. Prize is music contracts for thousands of plants, restaurants, stores. Plant music aids efficiency.

PAGE 77 — CMP SNARLS STUMP CONSTRUCTION MEN

Talk of CMP difficulties was the main theme both from the speaker's rostrum and the audience at last week's annual meeting of the American Institute of Steel Construction. Washington men were on hand to explain workings of CMP but members weren't satisfied. They had too many difficulties.

PAGE 91 — OPS ON NEW TACK — RAISING PRICES

OPS is working overtime on new ceiling price orders to permit industry to pass on higher costs. Motive is getting prices up before a new wave of wage demands breaks. The propaganda against the "terrible" Capehart amendment has been scrapped. Yet pricing officials deny any retreat.

PAGE 101 — EXPERTS CHECK ORIENTAL SCRAP SUPPLIES

Report to GSA has not yet been made public. It is expected to tell of good scrap stocks in the Orient. Exports of steel from Japan to U. S. continue to rise. Would-be new western steelmakers are hopeful of success. Steel jobbers in Northwest are unhappy, but not some jobbers in California.

PAGE 119 — MORE TITANIUM OXIDE IS BEING PRODUCED

The Quebec Iron and Titanium Corp. has shipped 340,000 gross tons of ilmenite from the Allard Lake mine this year. The ore contains about 35 pct TiO_2 and 40 pct of iron. It is the only large field of a hematite-bearing ilmenite ore known. Proved reserves are over 120 million gross tons.

PAGE 124 — CYBERNETICS: SUPERSCIENCE AIDS INDUSTRY

Increased use of robot controls in industry has created special problems. Development of new hybrid sciences poses questions which can only be solved by cooperative effort among sciences. Cybernetics will make sciences more understandable to each other. Better machines, methods will result.

PAGE 128 — HOW TO GET THE MOST FROM YOUR LATHES

The fifth of a series on how to get more production from your lathes describes bar feeds, taper attachments and attachments for radius and fillet turning. These accessories convert the ordinary lathe for work which might otherwise require purchase of a special machine, conserving machine use.

PAGE 165 — WILL THE STEEL SHORTAGE EASE NEXT YEAR?

Such predictions have been made periodically since 1945, but unforeseen events always made them wrong. Balance is bound to swing eventually, and 1952 may be the year. But consumers are in no mood to listen. Government red tape, confusion and double talk has their attention. They want steel.

NEXT WEEK — TOOL STEEL MILL WASTES GIVE UP ALLOYS

Critical alloys are now being recovered by an electric furnace process which are ordinarily lost in the form of mill scale, grinding chips and other process waste during tool steel manufacture. Every pound of metal recovered adds 5 lb of useful material available for consumers and defense.

Only with B. F. Goodrich grommet belts can you make these savings!

Save 3 ways! Investigate today! Write or mail coupon

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention.

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service, the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

What is a grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All cords put to work

Each of the two grommets and every part of a grommet carry their share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume—and less stretch. Grommet belts stretch, on an average, only about one-third as much as ordinary belts.

Better grip, less slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ⅓ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

Send for proof

Send the coupon for a set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others. Some typical cases:

"... within a few days ordinary belts had stretched ... After six months of 24-hour-a-day service BFG grommet belts haven't stretched at all ..."

"Ordinary belts lasted only 5 or 6 weeks ... B. F. Goodrich grommet belts are in their sixth month of service ..."

"Previous belts suffered from shock loads, wore out fast ... BFG grommet belts have been in service 2 years with no shut-downs..."

There are hundreds of cases like these.

They cost no more

BFG grommet belts cost not one cent more than others. The savings they make for you are clear profit. They are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,233,294).

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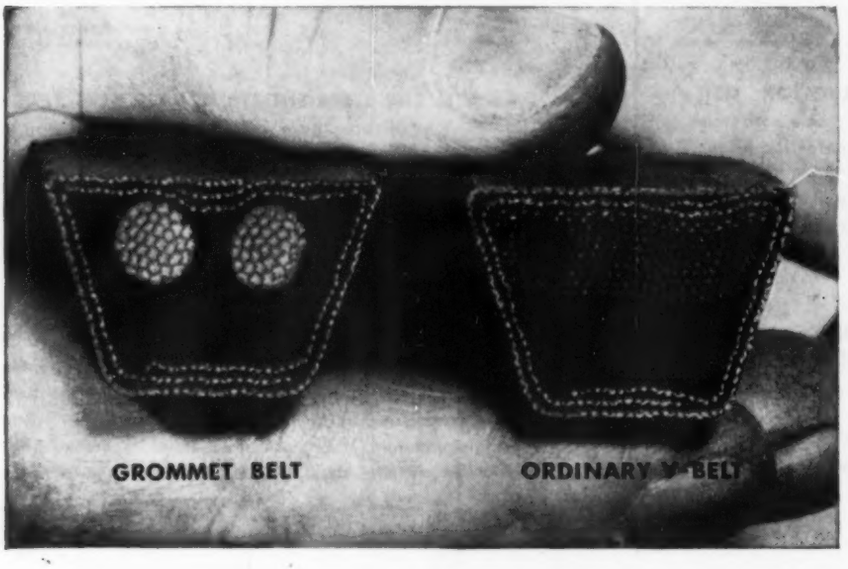

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☐ Have distributor show me the "X-ray" belt that shows how B. F. Goodrich grommet belts are made.

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The Iron Age
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THE IRON AGE Newsfront

► At least two companies are working on an order for 10,000 lb of titanium powder of minus 325 mesh. This powder has to be handled and shipped under water.

► Latest figures on Atomic Energy Commission plant and equipment requirements run to about $2.5 billion. Structural steel requirements alone total over 440,000 tons, which is just about what the entire steel industry produced last month.

► The Office of Price Stabilization is expected to get tough about enforcement of its new scrap price ceilings. The larger dealers and brokers can expect to be called to Washington where the law will be laid down to them. Following that meeting there will be one of presidents of large scrap consumers for a similar talk.

► Well laid plans of DPA and NPA for first and second quarter steel allotments could be badly upset by any or all of the following things which could happen during the first quarter of 1952: Steel strike, severe cold weather, increased and unexpected steel demand, late military expansion plans over and above current estimates or failure of the scrap drive to produce enough material.

Steel requirements okayed by NPA for the first quarter show 10 pct allotted for direct military orders. Addition of "B" components sends the figure up to 20 pct for direct military and military-supporting items.

► Production of rare earths from the new Western field will soon reach 70,000 lb per month.

► During the last 4 months of 1950 Japan exported 22,694 metric tons of steel to China. In 1951, total shipments to Japan's former best customer will total only 830 tons.

► A fifth licensee of the Sejournet (French) hot steel extrusion process is expected to sign up soon. Although deliveries on the necessary large presses have been difficult to schedule, it is believed that National Tube Co. will be first to get into operation —probably by the middle of 1952.

► At least one British expert believes that aluminum will be fully competitive in price with steel for structural purposes within 10 years. British steel costs are rising faster than those in the U. S. because of increased fuel costs in smelting low grade ores.

► The human body can stand higher G forces than previously thought possible. Air Force tests of a man on a rocket driven sled showed he could take a stress equal to stopping a car going 120 mph in 19 ft in a quarter of a second.

► The AEC has just released 25 more patents to industry. One is a pressure monitoring device particularly adapted for use with highly corrosive gases. Pressure of the reactive gas is automatically balanced by a non-reactive gas, the pressure of which is directly measured. The system can also be used to control the pressure of the reactive gas.

Another patent covers a rotary drill for cutting glass which acts like a pump to apply liquid carrying the abrasive to the cutting edge of the tool.

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If you are seeking a good source for your machine screw and tapping screw requirements with standard or special head designs in sizes ⅜" and smaller, you will find "UNITED" ready and able to fill your needs.

Machine screws and tapping screws are also made and carried in stock with the famous "Clutch-head" patented recessed head.

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FREIGHT: River Rates Attracting Industry

Higher land freight rates to put more reliance on river shipping . . . More modern equipment afloat . . . Industry moves South, Southwest to get lower barge rates —*By J. B. Delaney.*

Steadily increasing overland freight rates and decentralization of industry will put greater reliance on river transportation of products and raw materials.

Old Man River is carrying a heavier burden—and as the economic need grows for cheaper bulk transportation, so will his importance. He is now hauling millions of tons of steel, coal, chemicals, coke, oil, and other products and raw materials. He will carry yet more.

Streamlined Look—The rafts and packets of the old days have given way to diesel vessels and steel barges. Higher freight rates are pushing business to river shores. A lot of industrial transplanting is likely to go South and Southwest to take advantage of cheaper river transportation. A great slice of industry has already settled there.

Nothing could please the Pittsburgh steelmakers more. They are hemmed in by an inflexible barrier of high overland traffic costs. Rivers help them overcome this by opening up marketing areas in which they could not otherwise compete.

That's why Pittsburgh mills spend time and money locating desirable river plant sites for steel consuming industry. Also promoting new industries are river city chambers of commerce and barge line operators. This has produced results.

Appliance Park—General Electric Co. is building a giant appliance park at Louisville, Ky. At peak operation, the plant will employ 16,000, consume thousands of tons of steel. It is scheduled for completion in 1953. Evansville, Ind., has developed into the "refrigerator center of the world."

Three companies—Seegar Refrigerator Co., International Harvester Co., and Servel—consume more than 100,000 tons of steel per year. It is cheaper for them to get steel by water from Pittsburgh than by rail or truck from Chicago.

Shipments of iron and steel products by river from producers in the Pittsburgh area have wavered up and down in the last 15 years—*up* when shipping costs were important. In relation to total finished steel shipments of the same mills, movement of freight by water shows a slight upward trend.

Time Over Cost—In the critical war years of 1941 to 1945, when shipping costs could not be considered, water shipments dropped off. Time was priceless. From 1946 through 1949, freight costs got more consideration and river movements were more popular. The upward trend leveled off in 1950. With steel supply short and a defense program getting under way, shipping costs became less of a factor.

Barge line operators have tried to hold rates down (see table). The recent rate increase of 6 to 9 pct was the first since a 6 pct rise in 1936. Increased labor and material costs were absorbed through the economies of heavier volume, better front office procedure, and more efficient equipment. The industry spent $62 million in 1948, $47 million in 1949 for new towboats, tugs, and barges.

Smoke-belching stern wheelers have all but disappeared from the rivers. Modern twin screw diesel boats have taken over. For the same per day operating cost, the diesel will move two to three times the tonnage of the average stern wheeler.

Hauling Capacity—Modern steel barges hold three or four

Shipments of Finished Steel by Rail and Barge

	(Rate per ton)		(Delivery time) Days	
Pittsburgh to:	Rail (80,000 lb.)	Barge (500-ton-insured)	Rail	Barge
Louisville	$10.80	$2.45	3-4	6
Evansville	12.60	2.77	4-5	7½-8
Cairo	15.20	3.10	4-5	9
Memphis	19.80*	3.59	5-6	10
New Orleans	22.49*	6.02	6-7	13

*36,000 lb. minimum
Rates include 3 pct transportation tax.

NPA: Branches Help Tool Makers

Local offices can aid on production bottlenecks . . . Find subcontractors, know their capabilities . . . Can get fast answers, action . . . Save both time and money—*By W. W. Taylor.*

Because machine tool builders have been given the means to subcontract jobs as a result of tardy government pricing relief does not mean they can now sit back and take life easy. Still a tricky selective task is finding plants which can handle machine tool subcontracting work. The number is limited.

Several small companies have been placed into machine tool subcontracting by National Production Authority local offices. Serving, in some instances, as a wailing wall for firms unable to get materials or to unearth suitable subcontractors, NPA district offices have functioned as a clearing house—getting the two together.

It Works—Here are several case histories of NPA assistance to tool makers in the Cleveland area:

Company A was stumped in meeting its schedule. It had insufficient equipment and help for a mounting defense role. After talking to NPA, the builder learned of some smaller companies who were possible subcontractors.

At first try, the builder was able to push production up by 15 pct. He later subcontracted more parts work, boosting his production by another 25 pct.

Production Jumps—Company B took its trouble to the local NPA office and was given subcontractor leads resulting in a 10 pct production increase. Entire machines were subcontracted, with final assembly taking place at Company B plant. Advisory personnel helped subcontractors maintain correct procedures vital in proper assembly.

Company C was helped to subcontract components and subassemblies to smaller firms experienced in precision work. Production was upped better than 35 pct.

They Know The Area—One advantage of working through an NPA district office is its knowledge of the capabilities of manufacturers in the area. If there is no immediate answer, local offices can get the solution from Washington faster than a firm could send someone to the Capitol. Tool builders who find themselves stymied on production may get some help from district representatives of government agencies.

No CMP Quotas for New Products

Plans for manufacture of new products, if they involve controlled or allocated materials, will have to be postponed indefinitely.

Controls chief Manly Fleischmann says new product allotments, unless for defense production, will not even be considered. Also, National Production Authority will take all possible steps to block design or model changes in civilian hard goods for the next year—if the changes involve major retooling.

Because of the serious shortages of machine tools and some other types of related equipment, Fleischmann says, government cannot permit diversion of such goods from defense plants until the bottleneck in machine tools is broken.

NPA says it knows of no plans for major changes in automobile or other product designs. Reports on design changes mostly indicate minor revisions which will aid output under CMP.

Special Report

Continued

times the freight of the old-time packet boat. While the average tow today is seven to eight 1000-ton barges, powerful steam or diesel towboats regularly handle from 15 to 20 steel barges, the equivalent of 300 or 400 loaded 50-ton railroad cars.

A steel consumer need not locate directly on a river to profit freight-wise from water movement. Often a combination water-rail or water-truck rate will be cheaper than an all-overland rate. This takes into consideration cost of loading and unloading the barge and wharfage charges.

Disadvantages include slow movement and high minimum barge loads. The basic minimum barge load is 500 tons. A graduated scale of rate increases apply down to 200 tons. Some consumers would not be able to take advantage of the basic minimum rate either for lack of storage facilities or rate of consumption.

Prelude to Build-Up—To help small consumers, steel producers have located large warehouses along the rivers, from where orders can be shipped by rail and truck.

A movement is under way to establish a huge river-rail-truck port in Pittsburgh where LCL shipments from Pittsburgh mills and other industries could be combined to take advantage of the barge-load rates. A bill to set up a Port of Pittsburgh Authority is pending in the Pennsylvania State Legislature.

The Authority would have the power to issue bonds to build the terminal, and the right to condemn land for this purpose. Favored site of the port is on the Monongahela River.

Comprehensive studies of port sites and potential traffic have been made by Charles Donley and Associates, Pittsburgh.

CASTINGS: Founders Have Troubles

Competition, lowered activity chief worries . . . Production foundries harder hit than job shops . . . Pig iron, coke are good . . . Scrap fair . . . Revise castings ceilings—*By E. C. Beaudet.*

Growing competition and lowered levels of business activity were worrying members of the Gray Iron Founders Society meeting in Chicago last week. Order backlogs are falling off, price cutting is increasing and some foundries in different areas are only operating 4 or 5 days a week.

The industry started on another record year of production when 8 million tons of castings were shipped in the first 6 months. Some quarters still expect shipments to reach an estimated 14 million tons to top the 1950 record of about 13 million.

Slightly Pessimistic — Others are not so optimistic. They put present overall operations between 63 and 68 pct of capacity and don't expect them to exceed 75 pct before the year is out.

Hardest hit are those serving the automotive, farm implement and appliance manufacturers. Government production restrictions and softening markets in these industries have been sharply reflected in reduced orders for castings. Those supplying the machine tool field are in much better shape because of government pressure to boost machine tool output. Some automotive foundries are out after this business and are cutting prices to get it.

Large defense orders needed by production shops are said to be coming in slowly. Other firms report declining sales because their customers cannot obtain sufficient supplies of metals, components, etc., to keep up production.

Activity by Region—Firms on the West Coast are said to be more active than those in the East and Midwest. However, the brightest spot in the gray iron business is the South and Southwest. Large expansions by the oil and chemical industries are keeping foundry operations high.

Under present conditions foundries don't seem too worried over a materials shortage. Pig iron supplies are adequate and will improve when various blast furnaces now down for relining are put back in operation.

Coke also looks good. One foundry executive said, "Coke, and good coke, is coming out of our ears." Scrap is fairly easy, with rejections of poor-quality scrap becoming more frequent.

New Ceilings—While the meeting was under way, Office of Price Stabilization made amendments to Ceiling Price Regulation 60 governing ceiling prices on metal castings. One called for the exemption of short orders from price ceilings. Another allows producers to calculate metal costs on the average price paid for deliveries during the 30 days preceding the applicable dates specified.

The society's highest honor, the Gold Medal award, was presented to Walter L. Seelbach, president, Superior Foundry, Inc., Cleveland, for his outstanding leadership and unselfish service to the society and the gray iron industry. Other members receiving meritorious citations were E. L. Roth, Motor Castings Co., West Allis, Wis., and R. G. Schaefer, Schaefer-Goodnow Foundries, Inc.

E. L. Roth, Motor Castings Co., R. G. Schaefer, Schaefer-Goodnow Foundries, Inc., and H. J. Trenkamp, Ohio Foundry Co., were re-elected president, vice-president, and treasurer of the society for the coming year.

New members elected to the society's board of directors are T. I. Curtin, Jr., Waltham Foundry Co.; Max Kuniansky, Lynchburg Foundry Co.; J. E. Quest, J. E. Quest Foundry Co.; E. P. Trout, Lufkin Foundry Co.; W. A. Moreley, Olney Foundry Div., Link Belt Co., and C. H. Kerr, Dalton Foundries, Inc.

IRON & STEEL: September Production

As Reported to American Iron & Steel Institute

BLAST FURNACE —NET TONS DISTRICTS	Number of Companies	Annual Capacity	PIG IRON Sept.	PIG IRON Year to Date	SPIEGEL, FERRO-MANGANESE Sept.	SPIEGEL, FERRO-MANGANESE Year to Date	TOTAL Sept.	TOTAL Year to Date	TOTAL Pct of Capacity Sept.	TOTAL Pct of Capacity To Date
Eastern	12	13,870,680	1,145,786	10,206,960	23,764	242,387	1,169,550	10,451,347	102.7	100.7
Pitts.-Youngstn.	17	27,070,520	2,198,754	19,735,442	28,008	227,183	2,226,780	19,962,625	100.2	98.6
Cleve.-Detroit	6	7,110,600	577,806	5,147,021	.....	.....	577,806	5,147,021	99.0	96.8
Chicago	7	15,684,040	1,246,283	11,263,277	.....	5,694	1,246,283	11,268,971	96.8	96.1
Southern	9	5,310,740	400,341	3,971,943	11,063	71,866	411,404	4,043,809	94.4	101.8
Western	4	3,425,200	258,299	2,273,119	.....	.....	258,299	2,273,119	91.9	88.7
Total	38	72,471,780	5,827,269	52,599,762	62,833	547,130	5,890,102	53,146,892	99.0	98.0

STEEL —NET TONS DISTRICTS	Number of Companies	Annual Capacity	TOTAL STEEL (Incl. Alloy Steel, Carbon Ingots) Sept.	TOTAL STEEL Year to Date	Pct of Capacity Sept.	Pct of Capacity To Date	ALLOY STEEL Sept.	ALLOY STEEL Year to Date	CARBON INGOTS Sept.	CARBON INGOTS Year to Date
Eastern	25	20,823,230	1,726,215	15,370,803	101.0	98.7	133,881	1,247,084	625,729	3,250,397
Pitts.-Youngstn.	34	41,411,870	3,376,152	30,628,686	99.3	98.9	456,967	4,233,929	365,853	3,564,319
Cleve.-Detroit	8	9,601,940	807,373	7,250,453	102.4	101.0	86,069	816,048	100,145	909,218
Chicago	15	21,522,750	1,831,660	16,745,768	103.7	104.0	143,842	1,285,140	260,028	2,424,724
Southern	9	4,913,340	396,561	3,810,295	98.3	103.7	4,439	44,589	2,580	32,511
Western	11	5,956,520	516,936	4,533,634	105.7	101.8	10,634	98,487	28,070	294,534
Total	81	104,229,650	8,654,897	78,339,639	101.2	100.5	835,832	7,525,277	1,382,406	10,475,703

USWA: Seeks to Sign Non-Members

Non-union employees a headache . . . Cause discontent, cost money . . . Union could use dues . . . Union shop to be asked in negotiations . . . Management opposed—*By J. B. Delaney.*

The 25,000 to 50,000 non-union production workers in plants under contract with United Steelworkers of America are a headache to the union in more ways than one.

USW would like to bring them into the fold for these reasons:

(1) Non-members are a source of discontent among the dues-paying unionists, who refer to them disparagingly as "free riders"; (2) union puts on periodic campaigns, expensive in time and money, in an effort to sign them up; and (3) union could use the dues which, under the checkoff, could be collected with scarcely any additional expense.

May Be More—Check of industry sources indicates that the number of workers eligible for membership but who do not belong to the union averages around 10 pct of the working force. This would put the number closer to the 50,000-mark. Another source estimated the non-union workers at between 25,000 and 30,000. Picture varies by plants. One mill of 6000 workers reported that non-union employees numbered only 3. Another firm said 98 pct of the workers were members. A large mill estimated the non-member percentage at between 10 and 20 pct.

If these workers could be brought into the union, the revenue in initiation fees would be between $75,000 and $150,000. Annual dues would total between $600,000 and $1,200,000. Initiation fee is $3, dues $2 per month.

Ask Union Shop?—The USW may ask for the union shop in forthcoming contract negotiations. If it wins, it will relieve the pressure generated by the membership over the non-union workers.

If the union wins the union shop at all, it is likely to be on the basis that present non-members be permitted to remain out of the union if they choose. New employes and present members would be required to retain their membership. This is the type of contract signed by Crucible Steel Co.

Even so, a union shop demand would find considerable opposition from steel management. While several basic steel producers have signed such agreements, there is still a strong feeling among steel executives that employes should decide for themselves whether they want to join.

If the opposition became too strong, the union might trade off a union shop demand for other concessions. The USW says there are 543 steel producers, fabricators, and processors with 150,000 workers operating under union shop contracts.

Burroughs Workers Veto Union

A high-powered organization fizzled badly recently when 5436 of 7042 eligible Burroughs Adding Machine workers voted no union.

Behind the strong vote for the company lies a long history of enlightened labor policies. Overtime pay was started in 1904, paid insurance in 1907. Paid vacations were introduced in 1926 and paid holidays in 1936.

Burroughs maintains a 585-acre employee resort outside Detroit. Cost to the employee is $6 per year.

Of the election, UAW-CIO secretary Emil Mazey said, "We didn't get enough votes. It must be the paternalism practiced by the company."

"Dammit, why can't these temperamental guys just quit and let it go at that."

Strike Extends Export Licenses

Validity of export licenses covering shipments from Atlantic Coast ports which expired on or after Oct. 18 has been extended by order of the Office of International Trade for duration of the longshoremen's strike plus 30 days.

This action does not apply to use or extension of rating authority under the controlled materials plan nor other supply assistance program in connection with such licenses and exports.

Walkout of 18 office employees this week has idled the plant of the Virginia Bridge Company in Birmingham, Ala. More than 400 maintenance and production workers refused to cross picket lines set up.

Amend T-H Act Union Shop Rules

Special elections need no longer be conducted by the National Labor Relations Board before union shops may be included in labor contracts.

This new provision, approved by Congress and signed by President Truman last week, is the first change made in the Taft-Hartley labor law since enactment of that statute in 1947.

Top Brass Must O.K. Raises

Salary Stabilization Board has ruled that only a responsible corporate officer may provide the necessary certification in giving pay raises resulting from promotions, transfers, or new, changed, or reclassified positions.

MUSIC: Battle for Industry's Ear

Muzak's lead challenged by Functional Music . . . Promises battle of systems, wire vs. radio . . . Music lifts workers' efficiency . . . Employees like it . . . Noise overcome—*By W. V. Packard.*

A ding dong battle is shaping up in the industrial music field. Muzak Corp., long-time champion, is being challenged by a relative newcomer, Functional Music, Inc., Chicago. The battle promises to be one of systems: Music by wire vs. music by FM radio. The prize is service contracts to furnish music to thousands of industrial firms, restaurants, stores.

Functional Music is about 2½ years old. But growth has been extremely rapid, due partly to granting of franchises to other concerns. One such, Air Music, Inc., numbers installations in the hundreds since it started business in May of last year.

Muted Commercials—Air Music's service is transmitted through station WGHF-FM, New York. Home listeners get it free, with commercials. Industrial subscribers pay a modest fee (sometimes as low as 10¢ per employee per month)—but they receive no commercials. Commercials are muted out by a single control button at the sending station.

The radio station also carries public service announcements such as weather and news reports. Another important feature promises to be its link with civil defense. In the event of alert, spot announcements will be made carrying instructions from civil defense officials aimed at preventing panic. Since the station reaches stores, restaurants and industrial plants, as well as homes, officials can reach the right audience quickly.

Although the company expected to be in the red for the first few years, they have been operating at a profit since the first 8 months. They sold restaurants and stores first because they were easier—it wasn't necessary to go through channels. But recently they have been concentrating on industrial accounts—and doing very well.

Workers Like It—Industrial subscribers of Functional Music include: Inland Steel Corp. (office only), Kropp Forge Co., Accurate Spring Co., Crescent Industries, NESCO, Solar Electric Co., McGraw Electric Co., Amco Tool Co., Industrial Gear Co., Lewis Spring Co., Streeter Amet Co.

Do workers like music? The answer is almost unanimously "Yes." A wartime survey of music in 76 industrial plants showed worker morale was improved in 66 plants. Results were uncertain in 8 plants and there was no improvement in 2 plants.

Programming—Since then giant strides have been made in finding out about worker efficiency and the psychological role of music. This information is used by the program director in planning what music will be used and when.

For example, they have learned that workers don't like Dixieland, swing or jazz best; for worktime music they prefer a Strauss waltz.

The program director classifies all music by type. He then prepares a program in which movement from one type to the next is gradual, aimed at giving the worker the lift to iron out late morning and late afternoon production valleys.

In Noisy Plants—Noise? Makes no difference, if the installation is engineered properly. Very good results have been obtained in industrial plants where noise measures above 100 decibels. That's up in the rivet hammer class. Adding music to the noise doesn't make the noise louder. Difference in pitch enables workers to hear the music and forget about the noise, which is actually crowded into the background.

Automatic controls keep the volume constant. This prevents workers from becoming distracted. Object is for the music to seep into the subconscious, instead of being listened to consciously.

No matter how the battle of the flutes turns out, it will be sweet music to thousands of employees who will enjoy music while they work.

"I made a deal with the dentist next door—drill press shortage, you know."

Noted Editor Killed by Car

Erik Oberg, for 46 years on the editorial staff of *Machinery*, and 28 years its editor, was killed by an automobile in Rockford, Ill., Oct. 22. He was 70.

Mr. Oberg was born in Sweden and was graduated from that government's Technical College of Boras. Upon coming to this country he was employed as draftsman and designer by Cincinnati Milling Machine Co. and Pratt & Whitney Co.

He resigned his position as editor of *Machinery* in 1946 to become consulting editor. For 10 years he served as treasurer of American Society of Mechanical Engineers.

Mr. Oberg was well known in machinery and metalworking fields.

GAS: Hunt New Storage Fields

Underground stockpiling pushed . . . Will help meet peak winter demands . . . Bigger, cheaper than surface facilities . . . No fuel problem . . . Hard to find fields, try new type—*By G. G. Carr.*

Development of new underground gas storage fields will cost the American gas industry half a billion dollars in the next 3 years. Main reason is the chronic problem of meeting peak winter needs.

Natural gas use is outstripping delivery facilities. Despite a fivefold increase in electric weld pipe, production can't keep up with pipeline demands. Even if pipe were available, pipelines big enough to supply peak demands would be idle, unprofitable, most of the year.

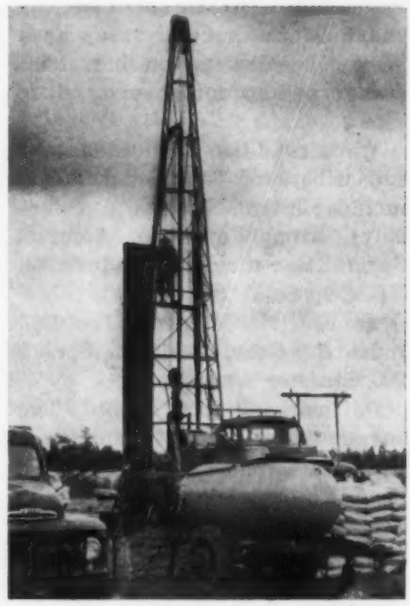
Cheap and Easy—Underground storage fields look like a happy and cheap solution. Usually old, depleted gas and oil fields, they receive and store large quantities of gas during the summer. When demand rises in winter, they can be quickly tapped.

Costs are way under those for surface storage: 2¢ to 53¢ per 1000 cu ft against $50 to $300 for the same amount above ground. Add more savings when utilities can buy their gas at firm year-round prices and hold it until needed.

Aspirin for Industry—Winter fuel shortages are a constant headache to industry. This problem is a juicy plum to utilities who can promise uninterruptible gas supply. Industries buying gas for about 17¢ per 1000 cu ft on an interruptible basis would pay about 35¢ on a firm contract.

Many firms are set up to use alternate fuels, depending on price and supply. Larger constant supplies of gas would give them more safety in playing the fuel market.

Hard to Find—Over 100 underground storage fields are now in use, most developed in the last 10 years. These hold an estimated 350 billion cu ft of natural gas—one-quarter the amount used yearly in American homes.



GAS: Test rigs like this are appearing all over the country as utilities push their search for possible sites for underground gas storage fields.

One abandoned gas field has a greater capacity than all the surface storage holders in the U. S. Storage in abandoned wells frequently pays plus values by increasing yield of gasoline contained in natural gas.

Search for new fields is widespread but difficult. Geologic specifications are rigid: fields must be able to take gas rapidly, hold it without loss, and release it quickly.

All Worth Using—The bigger the field the better, but even small ones are welcome. An ideal field holds about 30 pct of a system's annual firm sales. This capacity will carry a high load without using manufactured gas. Dumping through interruptible sales is eliminated.

Fields should be near pipelines and centers of consumption. The farther away, the higher the cost of putting them into service.

Some potential reservoirs in deep limestone and sandstone formations, which have never held oil or gas, are being tested. Engineers are also talking about the possibility of digging caverns from solid rock. These might be cemented to prevent leakage if necessary.

Gas men feel fine about these developments. Businessmen and investors, once somewhat chilly because of limited gas storage facilities, are warming up at the gas logs, too.

Fuel Oil Price Boosts Granted

Sellers of kerosene, distillate type burning oils, and diesel fuel in a dozen Midwestern states will be selling their materials at price increases ranging from 3/10¢ to ½¢ per gal, on the basis of new authority from Office of Price Stabilization (S.R. 3 to CPR 17).

These increases are effective at the tank-wagon distribution level. Dealers may adjust their ceiling prices to a point no higher than the selling price on Dec. 13, 1950, or next prior sales date, plus:

(1) ½¢ per gal in Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, and Kansas.

(2) 3/10¢ per gal in Arkansas, Indiana, Missouri, Nebraska, Michigan, and Illinois (except in metropolitan Chicago).

Materials for Coke, Coal

Coke and coal producers have been authorized under a new order (M-87) to use the symbol H-8 to obtain limited quantities of controlled materials for MRO purposes and small capital additions. The symbol DO-H-8 will be used to get noncontrolled materials.

Integrated coke plants as well as coal mines, coal preparation, and coal processing plants are covered by the order.

The base for calculating quotas will be the last 9 months of 1950.

STRUCTURALS: CMP Trips Industry

Construction men hear Washington experts explain how CMP works . . . Policy sounds fine but audience has troubles to prove otherwise . . . Quota system coming?—*By T. C. Campbell.*

If he boarded the train out of White Sulphur Springs, Va., grumbling about getting back to a desk-ful of CMP troubles, he was probably the average construction man returning from the American Institute of Steel Construction's annual meeting held last week in the Greenbrier Hotel.

You could also identify him by his talk about no CMP tickets, tickets that had drawn a blank at steel mills, 60 pct cutbacks on CMP rations, lack of mill production space. The construction man had just attended a session that included talks by government men on CMP—why it should work and why it hadn't. It appeared that even the mistakes had been planned beforehand.

But at the end of the oratory he felt that his own CMP experiences were a truer barometer of confusion than Washington philosophy.

Consensus on CMP — Boiled down opinion of some of the 600 people at this meeting indicated that:

(1) Business was good but new business was slow in coming. This may be temporary because of the defense buildup scheduled.

(2) Influx of a great deal of new business was worthless unless construction men had the right types of steel in sufficient tonnages to meet it.

(3) CMP tickets that could not be honored were broken promises and as good as having no tickets.

(4) Controls have more of a stranglehold than in World War II —and the headlock hurts even more because CMP is not working as smoothly as some government speeches would have the public believe.

(5) Pledges of open space in steel mills due to cancellations of duplicate orders—made at least twice by NPA—were still fiction rather than fact.

Quota System? — Construction men said they still had not experienced even the start of the era of steel plenty forecast by some in the steel industry several months ago. Most Institute members were worried about the probability that the quota system for filling orders within CMP was returning. Many had been told that it was on the way back.

Agreement was general that it would be hard to do business in a realistic way as long as industry was under tight controls.

This view was summed up by R. D. Wood, president of AISC, who blamed maldistribution of steel on controls. He and others felt industry could do a better job. Too many members had stories to tell of fixes CMP had pushed them into to believe otherwise.

How DPA Works—Government men on hand to explain workings of the top Defense Production Administration committee deciding on steel allocations and NPA were M. L. Anshen, of DPA, and W. Trupner, of NPA.

Tom Campbell, editor of THE IRON AGE, argued that many DPA and NPA troubles were organizational and urged a complete streamlining of authorities.

Other speakers were: E. T. Blix, vice-president, Mississippi Valley Structural Steel Co.; W. K. Maher, Atomic Energy Commission; John D. Griffiths, of AISC; J. V. Honeycutt, assistant vice-president, Bethlehem Steel Co., and Admiral Ben Moreell, board chairman of Jones & Laughlin Steel Corp., who was the featured speaker.

Mr. Honeycutt was optimistic on availability of structural steel for buildings in 1952. He said average tonnage booked by construction industry has been dropping since April and order backlogs are on the same trend. Requests for structural steel to DPA are greatly inflated and misleading, he said.

PRE-POW WOW: Range of subjects covered by speakers (shown above) at Institute of Steel Construction meeting was narrowed down to CMP and its problems. Left to right are: W. Trupner, of NPA; L. A. Post, AISC's executive vice-president; M. L. Anshen, of DPA; R. D. Wood, AISC president; and Tom Campbell, editor The Iron Age.

R. D. Wood, Mississippi Valley Structural Steel Co., was reelected president. L. Abbott Post was again named as executive vice-president. Other officers elected were John E. Jackson, Pittsburgh Steel Co., first vice-president; Earle V. Grover, Apex Steel Corp., Ltd., second vice-president; James M. Straub, Fort Pitt Bridge Works, treasurer; and M. Harvey Smedley, New York, secretary.

Structural Awards page 86

STEEL: Kill Free Market Exports

OIT to approve licenses for defense uses only . . . Much of first quarter quota already ticketed for strategic purposes . . . Petroleum favored . . . Only 39,000 tons left.

Steel for general commercial exporting is out of the picture in the foreseeable future. Under its present policy, the Office of International Trade will approve licenses for only three end uses.

These are: (1) for direct military production abroad for either this or an allied nation; (2) for production of strategic metals and minerals for this or an allied nation; (3) for a direct mutual-defense supporting program.

Hit First Quarter Quota—This yardstick has been applied to first quarter 1952 export quota of 628,000 short tons carbon steel (including 115,000 tons of tinplate and 54,000 tons of plate and structurals), a reduction of 67,000 tons from fourth quarter, and of which all but 39,000 tons had been licensed last week.

About 305,000 tons of the first quarter quota of general purpose steel (459,000 tons) have been directly ticketed for projects looking to increased production of petroleum, iron ore, copper, and other strategic metals and minerals. This figure does not include either tinplate or structurals.

Oil First — Because of the Iranian developments, petroleum production projects were favored and got about 90 pct of estimated minimum requirements. Shipments of 130,000 tons were licensed.

Allocations of 175,000 tons for facilities for production of strategic materials, however, are about 38 pct short of the estimated minimum requirements.

Some Already Started—Needed for projects already under way are about 184,000 tons a quarter while new approved projects need 100,000 tons to get started.

This means, export officials say, that during the current emergency their licensing decisions will be based largely on detailed statements of intended end uses backed up by documentary evidence of the need and intended use.

Lead, Zinc Content Raises Price

Basic metallic items containing lead and zinc, as well as galvanized products, will go up in price under GCPR, Suppl. Reg. 76, effective Oct. 24, to permit manufacturers to include the recent 2¢-per-lb ceiling increases for the metals.

Only those products for which ceiling prices are determined under the General Ceiling Price Reg. are affected by the Office of Price Stabilization action. These items include:

Lead sheet, foil, wire, pipe, and other extruded, rolled, or drawn lead products containing not more than 1 pct tin;

Lead anodes and shot;

Lead powder containing at least 95 pct lead;

Zinc sheet, plate, rod, foil, wire, and other rolled or drawn zinc products;

Zinc base alloys containing not less than 90 pct zinc and not more than 1 pct tin;

Zinc anodes and shot;

Zinc dust; and

Zinc powder containing at least 95 pct zinc.

FIRST QUARTER 1952 STEEL EXPORT QUOTAS
(Short Tons)

	4th Quarter '51		1st Quarter '52	
Total carbon steel export quota		695,000		628,000
Tinplate	125,000		115,000	
Plates, structurals	35,000		54,000	
	160,000		169,000	
General-purpose steel		535,000		459,000
Petroleum projects	130,000		130,000	
Other raw material development projects	121,000		175,000	
	251,000		305,000	
Balance for commercial export		284,000		154,000
Advance-licensed for critical end-uses				115,000
Unobligated balance of general-purpose steel for commercial licensing				*39,000

* As of Oct. 22.
Source: Office of International Trade.

Base Steel Allocations on Use

Allocations of steel for consumer durables for first quarter 1952 will be based on actual base-period consumption, rather than on shipments.

Most of the information needed is now in the hands of National Production Authority as a result of a new form which manufacturers have filed. Allotments by individual industry are expected to be completed within a few days.

Industry Controls This Week:

NPA Orders

M-6A, Sched. 1—Earmarks all production of aircraft-quality alloy steels for aircraft, guided missile, and atomic energy uses.

M-87—Allows coke and coal producers to use H-8 symbol to obtain controlled materials for MRO purposes.

OPS Orders

S. R. 75, GCPR, and S. R. 7, CPR 22—Increase ceiling prices on chemical compounds containing lead or zinc.

S. R. 76, GCPR—Increases ceiling prices on basic metallic products containing lead or zinc, and galvanized products.

S. R. 3, CPR 17—Increases ceiling prices for kerosene, distillate type burning oils, and diesel fuel in most Midwestern states.

GOR 15, Amend. 1 and CPR 30, Amend. 2, S. R. 2, Rev. 1—Lists types of machine tools covered by these regulations.

Radio and TV Stations Get O.K.

Construction of radio and television stations under self-certification of materials orders has been given the go-ahead signal—provided no more than 25 tons of steel, 1000 lb of copper, and 1000 lb of aluminum are needed per quarter.

Such projects have been reclassified from "commercial" to "industrial," thus granting the more liberal self-certification authority. This correcting what NPA calls an "obvious inequity" since radio and television should be in the same category with newspapers, magazines, and similar public services.

No Color—Meanwhile, an agreement has been reached with the television manufacturing industry to suspend manufacture of color television sets for the duration of the critical-materials shortages.

Reasons are that defense electronics need the same scarce materials as well as the fact that mass production of the new type sets would cause new demands for materials and equipment.

Heat-Treating Is Critical Job

Heat-treating has been added to the list of critical occupations compiled by the Labor Dept. The list is used by the Defense Dept. and Selective Service as a guide to military deferments. The job of Fourdrinier wire weaver also has been added.

"Oh, it's completely different from the '51—the tail-light is larger."

BRANDT

ON-TIME PRODUCTION OF PRIME AND SUB-CONTRACT DEFENSE WORK*

When the job calls for mass production facilities capable of giving dependable, on-time deliveries of component parts for prime and sub-contract defense work, Brandt has the answers. The 240,000 square feet of Brandt production lines are at your service.

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** Regardless of stepped-up defense production, our industrial accounts still receive prime consideration.*

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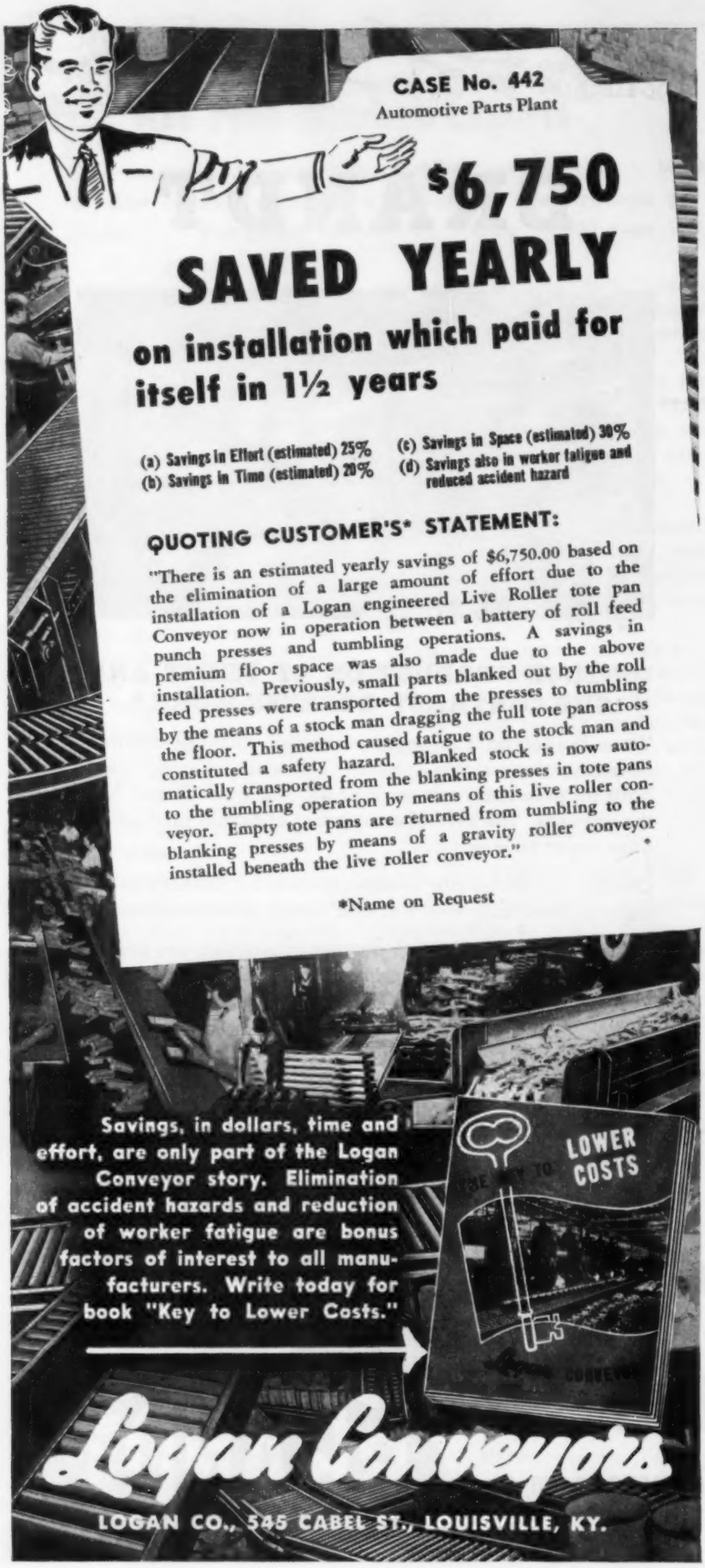
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(c) Savings in Space (estimated) 30%
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"There is an estimated yearly savings of $6,750.00 based on the elimination of a large amount of effort due to the installation of a Logan engineered Live Roller tote pan Conveyor now in operation between a battery of roll feed punch presses and tumbling operations. A savings in premium floor space was also made due to the above installation. Previously, small parts blanked out by the roll feed presses were transported from the presses to tumbling by the means of a stock man dragging the full tote pan across the floor. This method caused fatigue to the stock man and constituted a safety hazard. Blanked stock is now automatically transported from the blanking presses in tote pans to the tumbling operation by means of this live roller conveyor. Empty tote pans are returned from tumbling to the blanking presses by means of a gravity roller conveyor installed beneath the live roller conveyor."
*Name on Request
Savings, in dollars, time and effort, are only part of the Logan Conveyor story. Elimination of accident hazards and reduction of worker fatigue are bonus factors of interest to all manufacturers. Write today for book "Key to Lower Costs."
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Controls

Up Lead, Zinc Compounds Prices

Chemical compounds, including dry pigments, which bear substantial quantities of lead and zinc will be priced under new ceilings calculated to include part of the increased costs of the base metals.

Pass-through of a "substantial part" of the higher costs, Office of Price Stabilization says, is permitted when compounds include 15 pct or more, by weight, of either metal. The increased price is authorized whether the metal content is obtained from primary or secondary lead and zinc, or from scrap, oxides, residues, or ores.

To permit the pass-through, OPS has published Supplementary Reg. 75 to the General Ceiling Price Reg., and SR 7 to Ceiling Price Reg. 22.

CMP Fears Botch Up Procurement

Imposition of CMP and difficulty in making it work smoothly has made steel procurement more difficult, said Robert M. Nelson, Armco Steel Corp., at the convention of the National Assn. of Sheet Metal Distributors, held in Atlantic City.

He said fear of cutbacks in allotments have led to inflated CMP requests, asking for steel in advance just to be sure of delivery, and to placing of duplicate orders at steel mills.

Now that production quotas have been established, manufacturers of consumer durables have no incentive to import conversion steel, preferring to maintain their scheduled output with allocations of American steel purchased at lower prices. Previously, conversion steel supplemented what users could get in the regular market.

Wire Spring Industry Studied

Economists at the Office of Price Stabilization will survey the industry to determine proper ceiling prices for wire-spring products. Manufacturers have been promised a dollars-and-cents price regulation after the survey has been completed.

Scrap:

Short in Europe too; iron and steel producers very worried.

European iron and steel producers are on the anxious seat about scrap supplies. Both Sweden and Great Britain fear serious crises this winter if supplies are not increased.

Main source is Germany, and collections there are badly behind. Total collections in September fell from 481,000 to 405,000 tons, with only 46,000 tons available for export. Sorting and shipping take 2 months, so drop means Britain will receive only 19,000 tons of scrap in November.

No Will to Work?—West German government has started a scrap campaign. This may help, but some people feel Germany is dragging her feet on collections. She is allowed to retain the first 325,000 tons, and there may not be any real try to find more.

Swedish producers find German scrap imports very unsatisfactory. Shipments of the 100,000 tons provided for in the Swedish-Western Germany Trade Agreement are way behind.

Scrap shortage has forced many British rolling mills to shut down at different times. There is real danger that Britain may not fill her 1951 quota of 16,000,000 tons.

Britain Tries for Belgian Steel

With her own steel output hurt by a scrap shortage, Britain is asking Belgium for an extra 50,000 tons of steel. There may be trouble getting it, since Belgium can export at high prices all she can make. Britain pins her hopes on the fact that it is all to go for armaments.

First Danube Valley Iron

Hungary has set Nov. 7 for smelting the first iron at the new Danube Valley Iron Works at Dunapentele, 40 miles from Budapest. When finished, Dunapentele, it is claimed, will smelt more iron than all other iron works in Hungary put together. Under a

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These Continental warehouses carry extensive stocks of industrial hose, boots and rubberized work clothing. They're located within convenient telephone and delivery range of most industrial centers. And they're staffed with people specially trained to cater to your rubber goods needs. You enlist the services of specialists in rubber when you call a Continental Warehouse.

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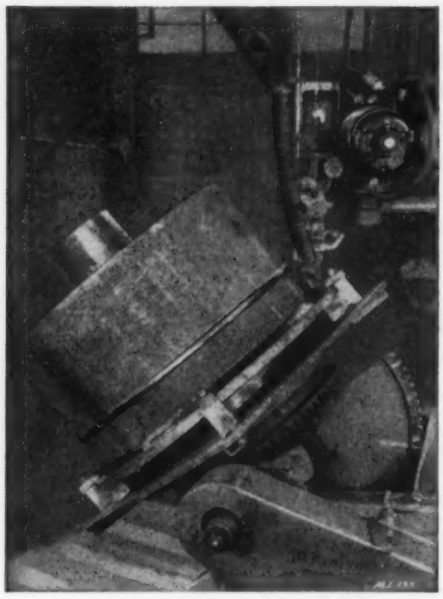

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• You can be sure of outstanding quality if your weldments are produced by Van Dorn. For Van Dorn has complete fabricating facilities . . . experienced design engineers . . . specially trained workmen . . . 77 years' experience in metal working.

Consult us about your requirements—no obligation, of course. The Van Dorn Iron Works Co., 2685 East 79th St., Cleveland 4, Ohio.

Send For
FREE WELDMENT BOOK

Profusely illustrated; describes the many advantages of Weldments, and Van Dorn's extensive facilities.

—International—

5-year plan which ends in 195[illegible] Hungarian steel production is t[illegible] be raised from 890,000 to 2,000,000 tons a year.

Iron ore will be imported from the Soviet Union. It will travel by barge down the Danube to a port specially constructed to serve the iron works. A three-kilometer-long overhead conveyor will carry both ore and coke to the furnaces.

Canadian Iron, Steel Highs Set

Canada's iron and steel production for 1951 is running consistently ahead of the high record made in 1950.

For the first 8 months this year, pig iron production set a new high at 1,667,589 net tons as compared with 1,498,036 tons in the corresponding period last year. Output this year included 1,299,959 tons of basic iron, 203,812 tons of foundry iron and 163,818 tons of malleable iron.

Production of steel ingots totalled the record high of 2,307,846 tons compared with 1,498,036 in the 1950 period. Steel castings ran 78,251 against 50,337 tons for 1950.

Lion's Share of Metals to U. S.

Almost one-half the tungsten and about three-fourths the molybdenum allocated for distribution in 18 free-world countries during the current quarter will be handled by the U. S.

In allocating ores and concentrates of these items, International Materials Conference authorized distribution to this country of 1550 metric tons of tungsten, of a total 3245 tons available, and 3620 metric tons of molybdenum, from an available 4720 tons.

India Builds First Atomic Pile

India will set up her first atomic pile within the next 2 years. France has agreed to cooperate in construction. Two other foreign governments are expected to collaborate.

Pile will be used for experimental purposes, and for the production of radio-active isotopes.

To Expand Copper Output

A $25,000,000 expansion program is to be undertaken by Phelps-Dodge Corp. designed to enlarge company capacity by 38,000 tons of copper annually.

New production will be brought in about late 1954 or shortly thereafter.

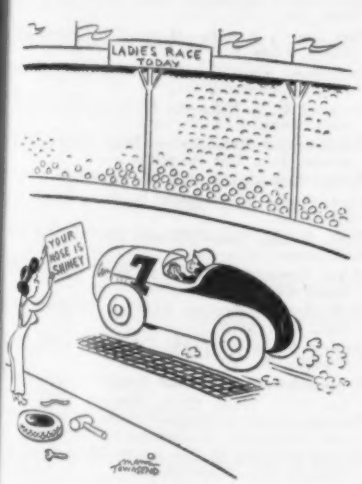
Expansion will be financed by the corporation, but the government has agreed to buy 112,500 of the first 150,000 tons produced at a guaranteed price of 22¢ per lb if industry does not want it at that price or higher.

A new concentrating and leaching plant will be built at the mine site of the company's Bisbee East Ore Body at the Copper Queen Branch. Smelter capacity at Douglas, Ariz., will also be enlarged.

Harvey Loan Proposed Again

Once again, Defense Production Administration is in a position to recommend a government loan that would enable Harvey Machine Co. to enter the primary aluminum business in the Pacific Northwest.

DPA decision, expected momentarily, will depend chiefly on whether Administrator Manly Fleischmann is convinced the nation will get the most for its investment by backing Harvey. When DPA originally gave its approval (THE IRON AGE, Sept. 6), it was decided that the Torrance, Calif., firm would get $46,000,000 from Reconstruction Finance Corp., repayable in 20 years with interest at 4½ pct.



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Electric Resistance
WELDED
STEEL TUBING

A Quality Product

ROUND
⅜" to 4" O. D. 9 to 22 gauge

SQUARE-RECTANGULAR
½" to 2" 20 gauge, 1" to 2¾", 14, 16, 18 gauge

Carbon 1010 to 1025

Michigan Tubing has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Design for Defense

Design and other advantages inherent in the use of electric resistance welded steel tubing resulted in its adaptation to hundreds of widely different weapons and materials for the armed forces during World War II.

These same advantages of design and adaptability make the contribution of Michigan tubing to the present defense effort a most important one, for reasons of fast, economical production. Problems of application to such items as automobiles, trucks, guns, bombs, etc., can be readily solved by consultation with Michigan engineers.

Michigan's facilities are at the disposal of manufacturers who are engaged in defense work, as well as those who wish to produce better consumer products at lower cost by the use of Michigan tubing.

THE OLDEST NAME IN ELECTRIC RESISTANCE WELDED STEEL TUBING

Michigan STEEL TUBE PRODUCTS CO.

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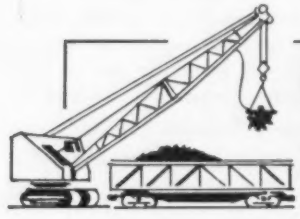
. . . takes "PRODUCTION HURDLES" in stride!

To help you get increased machine efficiency, increased output per man, and higher quality end products, it will pay you to investigate the advantages of Keystone Galvanized MB Wire.

Keystone's unique process of *drawing after galvanizing* smooths and hardens the zinc coating, which increases the wire's lasting qualities and physical properties. Other advantages are its smooth finish . . . even, uniform temper . . . and high tensile strength.



MARKET YOUR SCRAP!

Now is the time to houseclean your plant for all worn out and obsolete equipment. Iron and steel scrap, the vital ingredient in steel making, is in critically short supply.

In order to keep America's steel industry producing at the highest rate in history . . . the "forgotten" or neglected scrap in your plant is urgently needed. You can help yourself and your country by selling your scrap to your dealer NOW.

—Defense Contracts—

Contracts Reported Last Week

Circuit Breaker—Rumsey Electric Co., Philadelphia
Switch, Toggle—Manhattan Lighting Equipment Co., Inc., New York
Range Finder—Oliver Corp., Cleveland.
Road Sweeper—Utica Structural Steel, Inc., Utica 1, N. Y.
Refrigerator—Hussman Refrigerator Co., St. Louis
Subgraders—Gar Wood Industries, Inc., Findlay, Ohio
Air Compressor—Davey Compressor Co., Kent, Ohio
Sweeper, Road—Wayne Mfg. Co., Pomona, Calif.
Graders—Austin-Western Co., Aurora, Ill.
Grader, Road—Oxnard Heavy Maintenance & Mfg. Co., Oxnard, Calif.
Generator Set—Buda Company, Harwey, Ill.
Generator Set—Detroit Diesel Engine Div., General Motors Corp., Detroit
Ohmmeters—Manhattan Lighting Equip. Co., Inc., New York.
Ship's Radio Call Alarms—Bruco Electronics Corp., New York.
Reactor — Westinghouse Electric Corp., Chicago.
Plate, Bearing—Bendix Aviation Corp., Baltimore
Circuit Breaker — General Electric Supply Corp., Chicago
Refrigerator, Prefabricated—Sub-Zero Freezer Co., Inc., Madison, Wis.
Heater, Immersion—Sterling Mfg. Co., Omaha, Nebraska
Steamer, Vegetable—Market Forge Co., Everett, Mass.
Engine Assy.—Service Caster and Truck Co., Albion, Mich.
Components for M31 Bomb Cluster—Shwayder Bros., Inc., Denver, Colo.
Body, Bridge Cup—Whirpool Corp., St. Joseph, Mich.
Machine, Caliber—Moline Machine Co., Richmond, Va.
Hub and Cup Assy.—Motor Wheel Corp., Lansing, Mich.
Machine, Primer Assy.—Hires, Castner and Harris, Inc., Philadelphia
Tank, Degreaser—Topper Equipment Co., Inc., Matawan, N. J.
Electric Motors and Controllers — Manthan Electric Mfg. Corp., Burke Div., Erie, Pa.
Tool Ramming & Extracting—American Swiss Mfg.
Valves and Repair Parts—Manning, Maxwell & Moore, Inc., Bridgeport, Conn.
Repair Parts for Motors, Meters and Controls—General Electric Co., Philadelphia
Repair Parts for Electrical Equipment—Penn Electric Switch Co., Goshen, Ind.
Repair Parts for Gasoline Engines — Chris-Craft Corp., Algonac, Mich.
Repair Parts for Gyro Compasses—Arma Corp., Brooklyn
Valve Assys. and Repair Parts — Diamond Power Specialty Corp., Lancaster, Ohio
Repair Parts for Diesel Engines — General Motors Corp., Cleveland
Valves and Valve Repair Parts — Kieley & Mueller Inc., North Bergen, N. J.
Repair Parts for Reduction Gears—The Michigan Tool Co., Detroit
Auxiliary Detonating Fuze—Talon, Inc., Meadville, Pa.
Part for U. S. Rifle—Hartzell Industries, Inc., Piqua, Ohio
Component Part for U. S. Rifle—Wood-Mosaic Corp., Louisville, Ky.
Part for U. S. Rifle—D. M. Rose & Co., Knoxville, Tenn.
Telemetering Recorder — Bing Crosby Enterprises, Inc., Los Angeles
Cover, Tail—Rudy Mfg. Co., Dowagiac, Mich.
Fuze, Bomb, Nose—Royal Vacuum Cleaner Co., Cleveland
Fuze, Bomb, Nose—Chicago Electric Mfg. Co., Chicago
Motor Generators—Vickers Inc., Vickers Electrical Div., St. Louis
Radiophones—Mackay Radio & Telegraph Co., Inc., New York
Replenishment of Tanks—Homelite Corp., Port Chester, N. Y.
Replenishment of Motor Vehicle Parts—Ward LaFrance Truck Corp., Elmira, N. Y.
Replenishment of Motor Vehicle Parts—American Generator & Armature Co., Chicago
Radial Drilling Machines—W. E. Shipley Machinery Co., Philadelphia

Defense Contracts

Radial Drills—W. E. Shipley Machinery Co., Philadelphia
Precision Surface Grinders—Mattison Machine Wks., Rockford, Ill.
Trenches, Adjustable—Plomb Tool Co., Los Angeles
Lathe, Monarch—Machinery Associates, Inc., Philadelphia

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation no. or proposal, and opening date. (Invitations for Bids numbers are followed by "B," requests for proposals or quotations by "Q.")

Container assy, 3479 ea, (IFB-41-608-52-19), Oct. 25.
Container assy, 2580 ea, (IFB-41-608-52-19), Oct. 25.
Container assy, metal shipping, 3003 ea, (IFB-41-608-52-19), Oct. 25.
Connector, assy, 5000 ea, 111B, Nov. 16.
Thermocouples, iron, 1400 ea, 111B, Nov. 16.
Lead, iron, 1200 ea, 111B, Nov. 16.
Wire, iron, Constatan, 16 gage Potentiometer, portable, 10 ea, 111B, Nov. 16.
Switch, selector, 18 point, 50 ea, 111B, Nov. 16.
Punches, carbon steel, 6876, 5524-B, Nov. 13.
Threading sets, pipe, 1400 sts, 5538-B, Nov. 13.
Steel suspension band, 2370, 5549-0 B, Nov. 13.
Controller, magnetic, 1 ea, 6496-B, Nov. 9.
Machine, glass grinding, 65, 52-529B, Nov. 15.
Cable, assy, 180, 52-499B, Nov. 15.
Table, welding, 450, 52-483B, Nov. 15.
Machine, brake lining, 405, 52-542B, Nov. 19.
Gun, lubricating, 8660, 52-513B, Nov. 19.
Gun, pump, prot. coating spray, 35, 52-513B, Nov. 19.
Oiler, small hand trigger, 94800, 52-507B, Nov. 19.
Sling, chain, 35, 52-485B, Nov. 19.
Chain, tow, 6100, 52-485B, Nov. 19.
Indicator, temperature, 519 ea, 52-5073-Q, Nov. 5.
Meter, antenna efficiency, 25 ea, 52-5069-Q, Nov. 16.
Kit for installation of fuel shut off valve, 3000 kts, 52-51-33-Q, Nov. 6.
Heater, gasoline burning, 33 ea, 52-293-B, Nov. 1.
Machine, milling, horizontal, 1 ea, 52-295-B, Nov. 6.
Machine, sealing, 14 ea, 52-301-B, Nov. 5.
Spare parts for kit-mixing and transfer thickener, (CML-30-070-52-18), Nov. 7.
Button type snap fastener, 62500 ea, 169-B, Nov. 6.
Fastener, slide, 14400 ea, 169-B, Nov. 6.
Buckle, web strap, 81300 ea, 169-B, Nov. 6.
Rivet, tubular, 20000 ea, 19-B, Nov. 6.
Eyelet, button type snap fastener, 2400 ea, 169-B, Nov. 6.
Plate, clinch socket type, 6008 ea, 169-B, Nov. 6.
Washer, 1200 ea, 16, Nov. 6.
Eyelet, 1200 ea, 169-B, Nov. 6.
Washer, button type, snap fastener, 2100 ea, 169-B, Nov. 6.
Machines, nailing, 14 ea, 316-B, Nov. 16.
Tube, new—regular, truck and bus, 3300 ea, (11-070-52-280B), Nov. 14.
Machine, meat slicing, 753 ea, 52-409-B, Nov. 20.
Cylinder, oxygen, empty, with valves, 3000, (ENG-36-109-52-64-B), Nov. 6.
Cylinder, acetylene, empty with valves, 1200, (ENG-36-109-52-67-B), Nov. 8.
1200 RPM generators, 6 sts, 560-92-Q, Oct. 30.
Motor generators, 24, 560-106-Q X, Nov. 2.
Controllers, 24, 560-106-Q X, Nov. 2.
Voltage and speed regulators, 24, 560-106-Q X, Nov. 2.
Paralleling switch boards, 6, 560-106-Q X, Nov. 2.
Air conditioning refrigeration plants, 16, 52387/484/52-Q, Oct. 26.
Refrigerators, domestic, 19 ea, CHD-1020, Nov. 9.

How good management solved lost-time problem

Case No. 217—Problem: In handling wire products in 120°-180° chromic acid solution, heaviest rubber gloves frequently snagged and flooded, exposing employees' hands to hot acid and sharp wire edges. High injury rate and job dissatisfaction.

Management Solution: Modern type gloves with extra heavy duty coating of NEOX (reinforced neoprene) bonded to strong fabric which prevented tearing. Eliminated flooding hazard and materially improved worker efficiency and comfort (fabric lining absorbed sweat, insulated from heat, made gloves easy to slip on and off).

Change-over also saved up to $11 per man per week by greatly reducing glove replacement.

Safe hands lose no production time

We have case records of hundreds of industrial operations, handling all types of sharp, abrasive and slippery materials with and without the presence of heat, oils, acids, caustics, solvents, degreasants, where the proper selection of work gloves (supplied or recommended by management) has resulted in:

• Fewer lost-time accidents • Faster, surer work handling • Less spoilage • Improved job attitude • And 40% to 70% savings in usual glove costs to companies or employees who provide their own.

There's a correct glove for every job
Good management makes it available

Maximum Protection with Comfort, Freedom and Firm Grip

Extra heavy NEOX coating (reinforced neoprene, extremely resistant to cutting, abrasion, chemicals). Fabric lining prevents snagging, absorbs sweat, insulates, makes glove easy to wear. Non-slip grip. Many styles.

Heavy Weight or Flexible to Suit Work

Various types with NEOX (reinforced neoprene) coatings, over-all or on palm and thumb only. Fabric linings.

Non-Slip Natural Rubber Coated

Sure grip, wet or dry. Resist cutting, abrasion. Comfortable as canvas gloves but safer and wear 5 to 10 times longer.

Vinyl Plastic Coated Work Gloves

Very resistant to abrasion, oils, many chemicals. Special plasticizers preserve their flexibility. In various styles.

We offer consulting service on specific problems or complete plant surveys: **(Used by DuPont, Cadillac, RCA, Pittsburgh Plate Glass, International Harvester and many others.)**

Without cost or obligation we will gladly study your hand-protection problems and practices, make recommendations and furnish the procedures and materials for complete on-the-job tests. For full information, write our Safety Engineering Service.

Edmont **Edmont Manufacturing Company**
1234 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves

NONE BETTER... America's First and Safest

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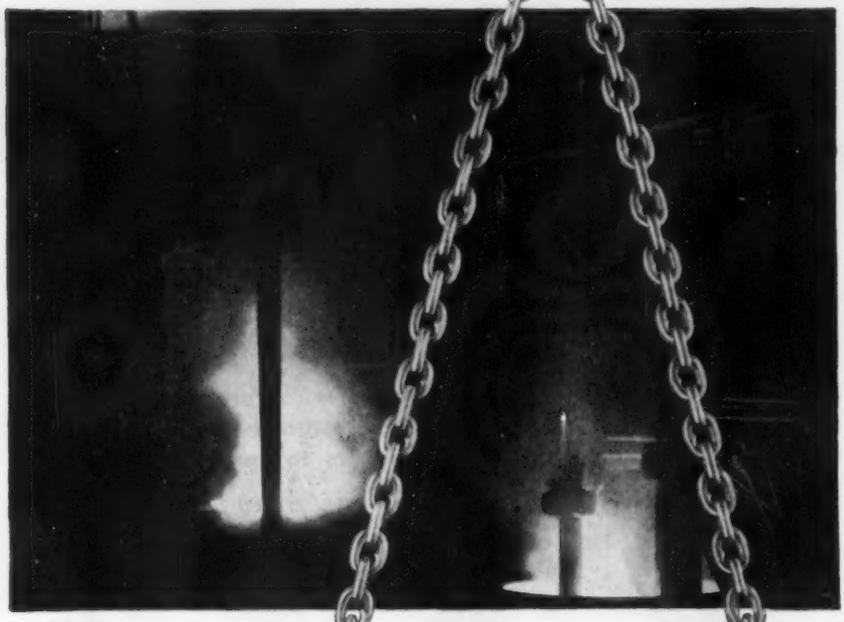
SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented Inswell side weld with the extra swell of metal on the inside of the link.

EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

COLUMBUS McKINNON CHAIN CORPORATION

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***District Offices:* New York • Chicago • Cleveland**

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

September Structural Bookings

New York—September bookings of fabricated structural steel as reported by the American Institute of Steel Construction amounted to 188,013 tons. While this figure showed a drop of 11 pct from the previous month, it closed the first nine months of 1951 with a total of 2,352,193 tons, some 10 pct higher than the corresponding period in 1950, when 2,277,503 tons were reported.

Shipments during September were 229,299 tons, below August but 12 pct over the same month in 1950 when 198,719 tons were reported. Total shipments for the first nine months of 1951 amounted to 2,043,773 tons, greater by 12 pct over the like period in 1950 when 1,657,380 tons were shipped.

The backlog (tonnage available for future fabrication) for the next four months only, (to January 31) amounts to 1,085,593 tons, and beyond that period another 1,494,752 tons of work stands on the industry's books, or a potential volume of work ahead of 2,580,345 tons.

Estimated Total Tonnage for the entire industry

CONTRACTS CLOSED	1951	1950	Avg. 1947/1950
January	361,373	147,276	161,97
February	256,746	146,696	152,18
March	297,517	236,111	221,35
April	337,026	191,183	177,82
May	268,166	237,476	176,26
June	207,966	333,000	196,72
July	223,130	341,952	229,33
August	212,256*	326,586	212,89
September	188,013	317,225	215,87
Totals	2,352,193	2,277,503	1,744,46
SHIPMENTS			
January	214,000	154,732	166,91
February	193,638	149,824	161,17
March	237,087	185,222	191,29
April	234,095	187,801	192,36
May	234,486	194,752	193,43
June	257,066	202,379	192,85
July	204,262*	165,515	183,23
August	239,840*	213,435	204,94
September	229,299	198,719	197,31
Totals	2,043,773	1,657,380	1,689,12
TONNAGE AVAILABLE FOR FABRICATION			
Within next 4 months (to Jan. 31, 1952)	1,085,593	992,602	725,28
After next 4 months (From Feb. 1, 1952)	1,494,752	801,145	596,55

*Revised.

Fabricated steel awards this week:

2775 **Tons,** New Cumberland, Pa., warehouses at New Cumberland General Depot, to Bethlehem Steel Co., Bethlehem.

Fabricated steel inquiries this week:

8000 **Tons,** Tobeyhanna, Pa., warehouses and other buildings for U. S. Army Corps of Engineers, bids due Nov. 1.

2200 **Tons,** Lancaster County, Pa., highway bridges for Pennsylvania State Dept. of Highways, bids due Nov. 2.

1700 **Tons,** Letterkenny, Pa., maintenance building and shop, Letterkenny Ordnance Depot, bids due Nov. 1.

1000 **Tons,** Park Ridge, Ill., Main Township High School, Poirot Construction Co., low bidder.

900 **Tons,** Beaver County, Pa., I-beam bridges for Pennsylvania State Dept. of Highways, bids due Nov. 2.

528 **Tons,** Harvard and Lancaster, Mass., relocation of U. S. Route 2. Completion date June 19, 1953.

406 **Tons,** Lancaster County, Pa., I-beam bridges for Pennsylvania State Dept. of Highways, bids due Nov. 2.

405 **Tons,** Dauphin County, Pa., I-beam and plate girder bridges for Pennsylvania State Dept. of Highways, bids due Nov. 2.

Reinforcing bar inquiries this week:

318 **Tons,** Harvard and Lancaster, Mass., relocation of U. S. Route 2. Martin J. Dalton, Worcester, district engineer. Completion date June 19, 1953.

253 **Tons,** Park Ridge, Ill., Main Township High School. Poirot Construction Co., low bidder.

150 **Tons,** Park Ridge, Ill., Joists Main Township High School. Poirot Construction Co., low bidder.

OPS on New Tack—Raising Prices

Propaganda attack on Capehart amendment scrapped . . . OPS now feels prices must be lifted before wage demands really start . . . May pass appliance taxes to consumer—*By G. H. Baker.*

The word is out to government economists: Get prices up before a wave of wage demands breaks.

At the Office of Price Stabilization, officials are working overtime on new ceiling-price orders that will permit manufacturers and fabricators to pass on higher costs.

Inglorious Retreat?—Last summer's propaganda barrage (the "terrible" Capehart amendment will permit "ruinous" price increases) has been completely scrapped. New line of price-control thought: Government can best "hold the line" by permitting "orderly" price increases.

Price-control officials deny that they are back-tracking. E. F. Phelps, director of price operations for OPS, says he has concluded that "there are many reasons" to believe the current "general" price level can be held.

Halted at House—OPS is required by law to set ceiling prices which reflect all "reasonable" cost increases through July 26. President Truman's request that this provision be scrapped was approved by the Senate, but was pigeon-holed in the House until next January.

The passage of time since the new control law went into effect last Aug. 1 has given OPS time to "learn about the effects" of the Capehart amendment, Phelps admits.

He says OPS now considers the cost-increase provisions to be "no serious problem."

Confidence in Business — Less than 2 months ago, Price Stabilizer Mike DiSalle, in testimony before the House Banking Committee on Aug. 30, said: "Business has practiced cost-absorption for years and has prided itself on its ability to absorb cost increases, yet maintain or lower its prices. By this technique, it has increased its volume and expanded its markets. During a prosperous time like this, when volume is at peak levels and markets are expanding, it is not unreasonable to abide by this time-proven principle of sound business procedure." Confused?

Wind's Shifted — Businessmen who make the Washington control agencies a regular port of call welcome the astounding news that OPS was now ready to cut through its self-imposed obstacles and drive toward the issuance of tailored price regulations for specific industries. It sounded almost completely unlike everything the price-control agency had said in the past.

"How about that steel allocation for Mr. Schultz?"

OPS denies, however, that any of these moves point in the direction of government-backed wage boosts. "We wouldn't know about that," they claim. But at the Capitol, few congressmen doubted that a new round of federally-approved pay increases would follow hot on the heels of higher price ceilings.

Pass Them On—The new and higher federal excises that manufacturers of many household appliances must start collecting on Nov. 1 may legally be passed on to purchasers.

OPS has ruled, however, that the higher amounts must be limited to the amounts of the tax increases. Jobbers and distributors may add only the dollars-and-cents amounts. Percentage mark-ups are not permitted.

New tax law provides higher levies on such products as truck chassis and bodies, automotive parts, and gasoline. Many household appliances, including dishwashers, floor polishers, garbage disposal units, and power mowers, are now subject to a 10 pct manufacturers' tax for the first time.

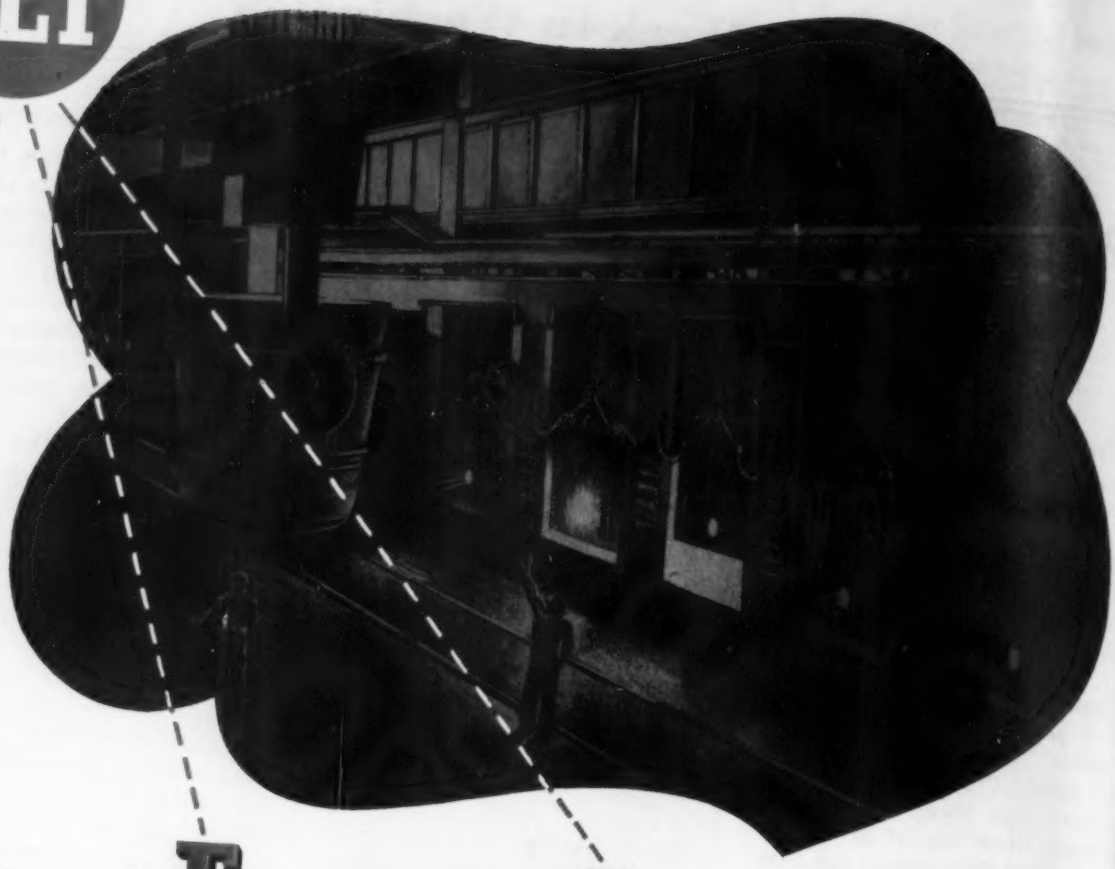
Pending Rules — OPS regulations now being prepared will:

1—Make it clear that manufacturers can pass along increases in excise taxes and must reflect the amount of any reduction or elimination of such taxes.

2—Require the manufacturers who have listed excise taxes separately in the past continue that practice.

3—By amendment to the GCPR, permit wholesalers and retailers to obtain their existing percentage markups on their new costs (including excise taxes) resulting from changes at the manufacturing level, except in certain specified cases where it is established that it was the customary practice of the industry to pass through only the exact dollars-and-cents amount of an excise tax.

F·E·I·



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F. E. I. BUILDS

OPEN HEARTH FURNACES,

SOAKING PITS—*regenerative and one-way recuperative,*

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DRILL PIPE: Output Must Rise 12 Pct

NPA asks for speedup even at expense of other oil country pipe . . . Oil industry still hit by shortage despite priority aid . . . PAD estimates drill pipe needs—*By K. Rannells.*

National Production Authority has passed the word to manufacturers that output of drill pipe must be stepped up by a minimum of 12 pct—even though this means a drop in production of other oil-country tubular goods.

Pipe shortage still is a continuous headache to the oil and gas industries, despite government priority assistance.

Oil is pouring from domestic fields at a rate of about 6,300,000 bbl daily. A couple of years ago the production ran at a 5,000,000 rate.

Oil Needs Climb—This is to be stepped up rapidly. There are now more than 52,000,000 trucks, buses, and automobiles registered. This will be increased by 4,000,000 cars and 1,000,000 trucks and buses in 1952. Military petroleum needs are growing swiftly.

More wells must be drilled. More pipelines and more refinery capacity are needed.

Pressing problem is more wells. Up until about 5 years ago, annual drilling never exceeded 34,000 wells. In the immediate postwar period, sights were raised to 39,000, then to 42,000, and now the government figures 50,000 won't be too many.

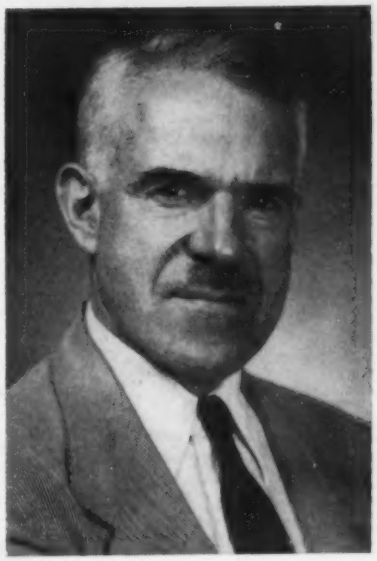
PAD Estimates—But, more drill pipe output is needed. As estimated by Petroleum Administration for Defense, first quarter requirements (looking to a 50,000-well target next year) will total 29,000 tons. This figure allows 1750 tons for Canada and includes 3200 tons for export.

This is the minimum figure, says PAD. Highest possible production for the quarter is 26,000 tons, says industry. Capacity must be converted to produce the extra 3000 tons, says NPA.

Pipe Capacity Up—Phenomenal growth of steel pipe lines in the last few years has been at a rate two to four times that of a decade ago. The industry points out that it has responded to upsurging demand, expanding capacity to produce electric weld steel pipe, which utilizes plate for molding into pipe by welding.

A great deal of large diameter pipe for long lines is made by this process. Capacity for this pipe has increased five times since prewar times. From 1948 to early 1951, capacity jumped 153 pct.

Steel Rations—PAD has been allotted 1,708,000 tons of steel for all purposes during first quarter. NPA says this should be sufficient to maintain the oil production and refining program "at a high level" but admits that some gas expansion would have to be postponed.



RESEARCH HEAD: Dr. Thomas H. Johnson, chairman, Physics Dept., Brookhaven National Laboratory, N. Y., has been appointed director of Atomic Energy Commission's research division. He will direct all AEC research in the physical sciences, and will supervise administration of isotope production and distribution.

Nearly one-third, some 495,000 tons of the PAD steel allotment for the first quarter, is to go into oil country tubular goods—including 10,000 tons for Canada and 45,000 for other exports.

Meanwhile, PAD has placed a number of oil pipeline projects in the highly essential category and is extending priority assistance. These include 12 major projects involving 4500 miles of pipeline.

Priorities Aid—Estimated requirements call for more than 582,000 tons of line pipe. About 193,900 tons of steel were allocated to the projects for fourth quarter and presumably the same amount will be allotted for first quarter.

At the same time, 12 large and several small natural gas pipeline projects have been given a similar go-ahead for priorities aid. These will require at least 278,000 tons of pipe for completion, of which the fourth quarter allocation amounted to 182,000 tons of steel.

Industry says that one of its major problems is to get small diameter pipe. Little delay is reported in the big diameter types but orders for the small sizes under 7 in. are reported to NPA as running far ahead of potential production.

Nonferrous Tariff Action

Early action next year by the Senate is expected on House-introduced bills providing for temporary suspension of import duties on lead, zinc, and tungsten.

Measures which would have canceled the import levy on lead and zinc reached the floor of the Senate on adjournment day, but strong opposition voiced by Sen. George W. Malone, R., Nev., had the effect of blocking any action prior to next Jan. 8, when Congress reconvenes.

Filed Tungsten—Senate Finance Committee has on file H. R. 5248, for removal of import taxes on tungsten. The House has given its approval of the bill.

Industrial Briefs

New Buyer—John C. Barnes has purchased the capital stock of Atlantic Steel Boiler Co. Mr. Barnes will be president of the organization which will operate under the name of ATLANTIC STEEL BOILER CO., INC.

New Line — MACKINTOSH-HEMPHILL CO., Pittsburgh, is producing a line of forged steel throwaway rock bits. A subsidiary, Drill Bit & Tool Co., will sell and distribute the bits to the mining, quarry, construction and other industries. Drill Bit & Tool Div. will manufacture the bits.

Contract Award—Koppers Co. will design and construct a battery of 15 chemical-recovery coke ovens at the Houston plant of SHEFFIELD STEEL CORP. With the 47 ovens already operating, the plant's annual coal carbonizing capacity will rise to more than 500,000 tons when the new battery is installed.

Nitriding Facilities—Chemical Plants Div. of BLAW-KNOX CO., will build nitriding facilities at the Harrison, N. J., plant of Otis Elevator Co. for the nitriding of aircraft cylinder barrels. Otis has a contract with the U. S. Air Force.

Iron Ore Development — KOREAN MINING CO., Japan, has an agreement with the Portuguese colony of Goa, 300 miles south of Bombay, to mechanize and develop iron ore mines. Investment of about $1.6 million is expected to boost output from 200,000 tons annually to approximately 1 million tons.

New Address—LYON, CONKLIN & CO., INC., recently opened their spacious new Washington warehouse at 711 Edgewood St., N.E., with an open house and buffet lunch, which was attended by 500 of their customers and friends.

Million Dollar Mill—Construction has begun on a new $1,000,000 steel mill for FABRIKANT STEEL PRODUCTS, INC. The Fabrikant steel mill will be the first major new plant development in the steel industry in eastern New York state in over 30 years.

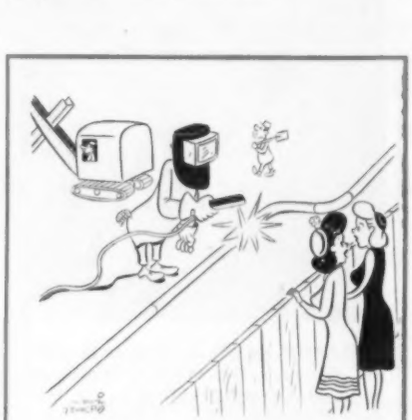
Enlarged Quarters — CLEVELAND GRINDING MACHINE CO. has moved to greatly enlarged quarters at 1643 Eddy Road, Cleveland.

Safety Mark Set—With 135 steel foundries participating in a national safety contest, sponsored by STEEL FOUNDERS' SOCIETY OF AMERICA, on an industrywide basis, a total of 23 steel foundries qualified for awards. There were ten winners of highest honor awards for accident-free operations during the 3-month competition and 13 others which maintained near-perfect records.

Timely Topic—New methods of increasing metal production to combat increasingly critical shortages of alloys and metal products will be discussed at the 1951 annual research meeting of the MEEHANITE METAL CORP. at the Hotel New Yorker, New York, Nov. 7-9.

Representatives Appointed—Adamas Carbide Corp. has appointed K. J. PAPKE CO., INC., Milwaukee, as representatives for the Wisconsin area; AUSTIN FORD LOGAN as representatives for the Buffalo and Syracuse area and JOSEPH G. WINDHEIM, as its Rochester area representative.

New Warehouse and Offices—HILL-CHASE STEEL CO. opened its new warehouse and offices at 6501 Erdman Ave., Baltimore, Oct. 26.



"Oh dear! Is that what I promised to go out with tonight!"

For Emergencies — Chemical Plants Div., Blaw-Knox Co. will build a propane gas standby unit for WESTINGHOUSE ELECTRIC CORP. at Irwin, Pa., for use when the supply of natural gas is interrupted or curtailed.

Dual Purpose — General Motors will build a dual purpose plant for defense and civilian production on a 225-acre site at Arlington, Tex. The plant will be operated by GM's Buick-Oldsmobile-Pontiac assembly division. Tooling for Grumman planes will begin immediately.

Takes Space—LURIA BROS. & CO. has leased space for its Los Angeles offices in the first of the three 12-story (limit height) air-conditioned office buildings under construction at 3440-50-60 Wilshire Blvd.

Under Consideration—American Stove Co. will, with the consent of its stockholders, change its corporate title to MAGIC CHEF, INC. The company expects the stockholders to ratify this change of name and make it effective December 31 of this year.

New Home—The direct office of CINCINNATI MILLING & GRINDING MACHINES, INC., and CINCINNATI MILLING PRODUCTS DIV. have moved to new quarters occupying about twice their present space, and are located at 24100 N. Woodward Ave., Pleasant Ridge, Mich.

Engineering Center—Plans for a new $22,000,000 engineering center at COLUMBIA UNIVERSITY, New York, to advance new concept in science and engineering education have been announced.

Three Ready—The first three of the nine openhearth furnaces under construction at the Fairless Works, U. S. STEEL CO. will be completed Feb. 1.

Gets Contract — RUST ENGINEERING CO., Pittsburgh, was awarded the engineering and construction contract for an addition to the boiler plant of Woodward Iron Co. Involved is a new 125,000 p.p.h. boiler with auxiliaries including a 5,000,000 p.p.h. feedwater heater and clarifier.

BUSINESS IN MOTION

To our Colleagues in American Business ....

For several years this space has been used to tell how Revere has collaborated with its customers, to mutual benefit. Now we want to talk about the way our customers can help us, again to mutual benefit. The subject is scrap. This is so important that a goodly number of Revere men, salesmen and others, have been assigned to urge customers to ship back to our mills the scrap generated from our mill products, such as sheet and strip, rod and bar, tube, plate, and so on. Probably few people realize it, but the copper and brass industry obtains about 30% of its metal requirements from scrap. In these days when copper is in such short supply, the importance of adequate supplies of scrap is greater than ever. We need scrap, our industry needs scrap, our country needs it promptly.

Scrap comes from many different sources, and in varying amounts. A company making screw-machine products may find that the finished parts weigh only about 50% as much as the original bar or rod. The turnings are valuable, and should be sold back to the mill. Firms who stamp parts out of strip have been materially helped in many cases by the Revere Technical Advisory Service, which delights in working out specifications as to dimensions in order to minimize the weight of trimmings; nevertheless, such manufacturing operations inevitably produce scrap. Revere needs it. Only by obtaining scrap can Revere, along with the other companies in the copper and brass business, do the utmost possible in filling orders. You see, scrap helps us help you.

In seeking copper and brass scrap we cannot appeal to the general public, nor, for that matter, to the small businesses, important though they are, which have only a few hundred pounds or so to dispose of at a time. Scrap in small amounts is taken by dealers, who perform a valuable service in collecting and sorting it, and making it available in large quantities to the mills. Revere, which ships large tonnages of mill products to important manufacturers, seeks from them in return the scrap that is generated, which runs into big figures of segregated or classified scrap, ready to be melted down and processed so that more tons of finished mill products can be provided.

So Revere, in your own interest, urges you to give some extra thought to the matter of scrap. The more you can help us in this respect, the more we can help you. When a Revere salesman calls and inquires about scrap, may we ask you to give him your cooperation? In fact, we would like to say that it would be in your own interest to give special thought at this time to all kinds of scrap. No matter what materials you buy, the chances are that some portions of them, whether trimmings or rejects, do not find their way into your finished products. Let's all see that everything that can be re-used or re-processed is turned back quickly into the appropriate channels and thus returned to our national sources of supply, for the protection of us all.

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Switch to Tank Output Major Project

Conversion of Cleveland Tank Plant from warehouse to defense plant formidable task . . . Extensive changes undertaken . . . Borg-Warner strike heads into third week—*By W. G. Patton.*

The best argument for dual-purpose civilian-defense plants is the recent blow-by-blow account of the conversion of the Cleveland Tank Plant from a bean storage house to production of Walker Bulldog tanks by Cadillac Motor Car Div. of General Motors. (THE IRON AGE, Aug. 30, 1951, p. 88.)

Last week members of the Detroit Section, Society of Automotive Engineers, heard the details of this remarkable transition from Edward N. Cole, plant manager, and Harold G. Warner, assistant general superintendent. Preconceived notions of the members about the simplicity of changing over from civilian production to war production went flying out the window.

The conversion problems presented in Cleveland were much more formidable than anyone anticipated. For the first time some Detroit SAE members understood the real meaning of conversion.

Tank Testing—Work on the Cadillac tank project, including tooling, was started even before the tank design was finalized. Vehicles were tested on a 24-hr basis to obtain as much information as possible before the tank went into production.

The tank division's engineering department distributed 3½ million engineering release notices to suppliers. Its blueprint department used 4,750,000 sq ft of blueprint paper to accomplish the final release of assemblies to be built by Cadillac alone.

Material Flow—Laying out the plant was started Sept. 14, 1950. Cutouts of various machines were laid out on an aluminum grid. The scale layout was ¼ in. per ft. Because heavy machines had to be placed over unexcavated areas, the general flow of material to conveyor lines was unusually complex.

Cadillac engineers widened the main aisles to accommodate highway trucks and trailers. This eliminated double loading of heavy components.

A new waste disposal plant had to be built to handle cutting and soluble oils. Water requirements were double the amount previously needed. Approximately 10,000 ft of 24-in. water mains were laid. The ventilation system had to be expanded to dissipate fumes from welding operations.

More Power—Installed electrical capacity of the plant was only about half the requirements of the tank plant. A new electrical system had to be built. New conductors and bus ducts were installed.

"Perhaps a condenser and a new set of plugs would pep me up a bit."

While the plant was being laid out and engineering work was completed, Cadillac began to build up its list of suppliers. The tank plant now has 600 productive and 2300 non-productive suppliers. Of this number, 1700 suppliers are located in the Cleveland or Northern Ohio area.

Third Strike Week—As this is written, the Borg-Warner strike is headed into its third week. Two plants — International Harvester and Harry Ferguson, Inc., Detroit—have been seriously hit thus far. IHC is resorting to emergency shipments by air and truck to avert a shutdown. Ferguson has temporarily closed its Detroit plant.

No one knows just when the Borg-Warner tieup will seriously affect automobile output. The industry had advance warning of a stoppage. Steps were taken by many B-W customers to protect themselves against a tieup. While some divisions buy parts from Borg-Warner, the company is not a major GM supplier. Both Ford and Chrysler buy extensively from B-W.

Big 3 Pressure?—It now looks as though auto production might carry on for another 2 weeks before serious repercussions occur. The union is evidently hoping the Big Three will exert pressure on Borg-Warner to accept a master labor agreement. Borg-Warner insists it has no authority to replace its divisions as bargaining agents with UAW locals.

Under the GM contract, a wage differential is maintained between different localities. There is wage bargaining in the different GM plants with the union locals.

From Bumper to Tailgate . . .

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TIRES: New Machine Does Mounting

Oldsmobile's vertical ram device and conveyer assembles wheel, casing, tube, trim ring . . . Hardly any manual handling . . . Machine licks engineering problems—*By Walter Patton.*

Oldsmobile's determination to lick a problem that defied mechanization has brought forth another of those machines that are clever to the point of wizardry. Now, assembly of wheel, casing and tube, and trim ring is a completely mechanized operation at the new Oldsmobile Assembly Plant, Lansing, Mich.

Except for positioning the tire on the wheel, all manual handling of parts has been eliminated. The machine consists of a cam-actuated tire-mounting device synchronized with movement of a conveyer. Capacity is 500 per hour.

Problems Overcome—The new machine overcomes problems that have been stumping Detroit engineers for years. Mounting a stiff, new tire casing and tube on a moving wheel without manual assistance was a puzzler.

To further complicate the problem, delivery of wheels and tires is controlled by a telautograph which matches up wheels of the proper color with casings of the right size and color. Oldsmobile's tire-mounter now mounts three different sizes of tires.

The wheel is discharged automatically at its proper position on the special conveyer line. Casings with partially inflated tubes set in place are fed by gravity onto a set of two power-driven rolls that operate like a centerless grinder. They rotate the tire while soap is sprayed on the casing and tube to facilitate the mounting operation.

Vertical Ram—A machine operator lowers the casing into position. The tire-mounting machine has been moving along with the conveyer. At the correct instant, it forces one side of the casing into place with a vertical ram. Then a horizontal arm with a roller mounted at the end "rolls" the casing onto the moving wheel.

The conveyer carrying wheel and tire assembly flows to an operator who adjusts the position of the tube to the hole in the wheel rim and attaches an air hose. Thirteen tires are inflated simultaneously as the conveyer moves the wheel assembly along.

When the tire is inflated to the correct pressure, an air actuated mechanism releases the air line, permitting it to complete the cycle. The air hose is then ready to inflate another tire.

Next an operator lays a chrome-plated trim ring on the wheel assembly and another machine, whose lateral movement is geared to the speed of the conveyer, forces the trim ring into position. At the completion of the assembly operation, the wheel and tire are automatically removed and delivered to the car assembly line.

Willys Gets Forging Contract

U. S. Air Force has granted Willys-Overland Motors, Inc., a $10,000,000 contract to expand by 60 pct its present steel and aluminum forging capacity at its Toledo plant. New equipment will be used in making jet engine parts and other aircraft forging.

Machinery covered by the contract includes 20 steel drop hammers, 30 forging and trim presses, and several billet furnaces for each of the hammers. Present forging capacity of the plant is about 2500 tons per month. The company recently reported an order backlog of nearly $2,000,000.

THE BULL OF THE WOODS — **By J. R. Williams**

SHOP JOKERS COULD RUIN A GUY'S HEALTH IN A YEAR IF YOU'D LET 'EM! THEY SWITCHED GEARS ON HIM AN' HE THINKS HE'S CUT TH' FIT TOO SMALL AN' RUINED TH' SHAFT!
YEH, IN TEN MINUTES THEY PUT YOU THROUGH ALL TH' EMOTIONS A HUMAN BEIN' USES IN A YEAR -- SURPRISE, FRIGHT, DESPAIR, ELATION, THEN ANGER -- AN' YOU GOT TO SWALLOW IT ALL!
11-2
J.R.WILLIAMS
THE HEARTBREAKERS
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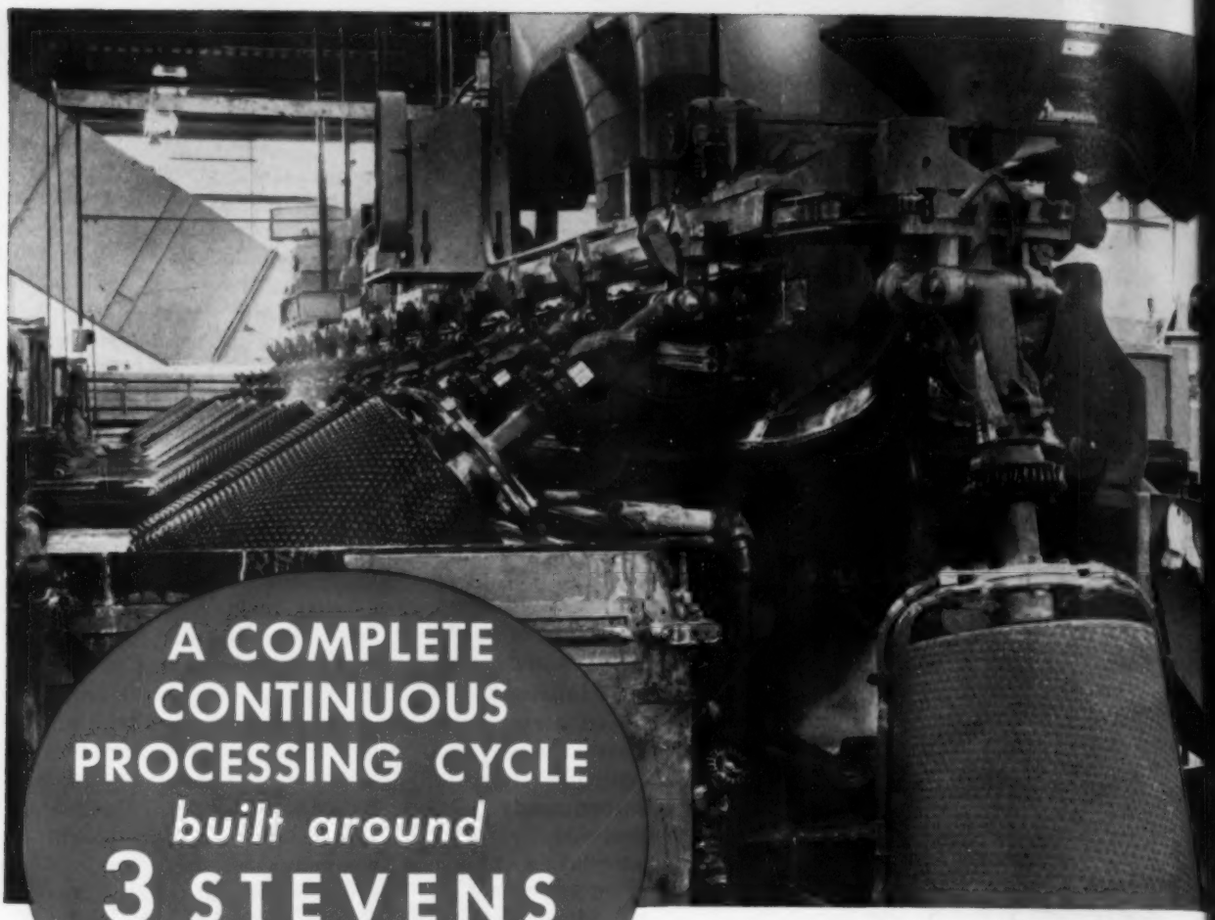

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Shakeproof, Inc., Elgin, Illinois, is realizing new operational economies with their Stevens Full Automatic installation for complete processing of small, stamped and cold headed fastening devices. The entire processing cycle is automatic and includes cleaning, plating, rinsing, bright dipping and drying. Two Stevens Full Automatics are used for zinc and cadmium plating while a third Stevens unit is used for phosphatizing parts requiring such treatment.

According to Shakeproof, their Stevens continuous processing installation gives better control of plating thicknesses, fewer rejects, cleaner operation with reduced operating manpower requirements, and absolute minimum material handling costs because of its straight-flow operation.

You can bring these same benefits to your plating operations with Stevens equipment. Stevens Full Automatics are *designed* to fit in with continuous automatic materials handling installations. Indexing controls can be easily adjusted to meet virtually any processing requirement. Maintenance is held to a minimum. Have your Stevens representative show you all of the advantages offered by Stevens Full Automatic Plating Machines. Or, write direct to *Frederic B. Stevens, Inc., Detroit 16, Michigan,* for full details. There's no obligation.

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CRAP: Check Supplies in Orient

Experts' report not yet public . . . Expected to tell of good supply . . . Japan exports rise . . . Would-be new producers still hopeful . . . Northwest jobbers unhappy—*By R. T. Reinhardt.*

Western steel producers and sers are mighty anxious to know hat's in the report of the special ve-man committee which has re-ently returned from a 6-week rap inspection tour of the rient.

These experts covered some 30,-00 miles probing into potential rap sources in Korea, Japan, dia and Pacific islands. They ported their findings to General ervices Administration early in ctober.

Scrap There — Two western embers of the group have thus ar been mum on what they recom-ended. If and when the report is ade public, it probably will state at there is enough scrap in the erritory surveyed to keep western urnaces operating 6 to 8 months nd that it can be delivered to this oast at an economically practical ost.

Reverse English—Some of that on ore from Nevada and British olumbia which has been going to apan may be coming back in the orm of finished steel.

California Bag and Metal Co., eaded by Maurice J. Rosenfeld, ecently brought into Portland, re., about 5000 tons of sheets nd plate from the Fuji Steel and ron Works of Hirohita. This is a art of a total of about 8000 tons f Japanese steel to arrive in the acific Northwest so far this year.

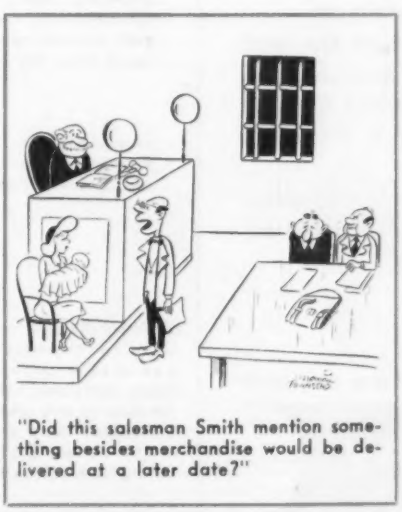
Still Plugging—Two would-be ntrepeneurs in the steel busi-ess in the West are still hopeful hey'll make the grade.

Last week Miss Merle E. Fuller, executive director of Bidwell Engineering Co., Reno, Nev., told THE IRON AGE that the company was definitely going to produce pig iron in Reno and is negotiating for the plant. Further details were lacking.

G. I. Dumond, Sacramento, Calif., mining engineer, continues to visit federal offices seeking support for Yolo Steel and Metal Co.'s proposed $264 million integrated steel plant in Yolo County, Calif. Sen. O'Mahoney, of Wyoming (from which state Yolo Steel plans to get its coal), is assisting.

Hard Times—Pacific Northwest steel warehouses are crying the blues a bit louder than those anywhere else on the Coast.

One leading hardware house and steel jobber in Seattle insists that unless 44,000 tons of steel are dropped in that area immediately, a "crisis" will arise. His house normally carries 1400 items; a month ago 880 of these were out of stock; now 1000 items are not available. He contends that increases in allocations of 35 pct are justified for that area because of the low ebb of business during the base period.



"Did this salesman Smith mention something besides merchandise would be delivered at a later date?"

Can't Be Too Bad—While steel warehousemen in the Pacific Northwest are unhappy, California jobbers aren't too badly off. They report short supplies of most items, but look forward to increases in allocations.

Ziegler Steel Service Co. recently opened a new warehouse in Oakland, Calif., with expanded facilities and plans a new warehouse in Wichita, Kan. This will be devoted largely to aircraft steels and will be supplemented by service from its Los Angeles main warehouse.

Geneva's Magnetic — Effect of Geneva Steel Co. on Utah industry is indicated by the report of Chicago Bridge and Iron Co. to the effect that it has invested $3 million in its operations in Salt Lake City.

Although indirect, there is other evidence to show that Geneva is having its effect in gradually modifying the agrarian economy of the state. American Foundry and Machine Co. is expanding to handle castings up to 2 tons; Pacific States Cast Iron Pipe Co. is starting work on a $500,000 office building at Ironton; and Union Pacific Railroad will soon start construction of a $5 million repair center for diesel and diesel-electric equipment in Salt Lake City, Utah.

Saving Cryolite—Because cryolite is getting harder to come by, Kaiser Aluminum and Chemical Corp. at Meed, Wash., is spending $50 thousand to build a plant to recover the material from the carbon lining of the pots. A 100 pct recovery is anticipated.

Metallurgical furnace investigations in the laboratory influence heat processing in manufacture.

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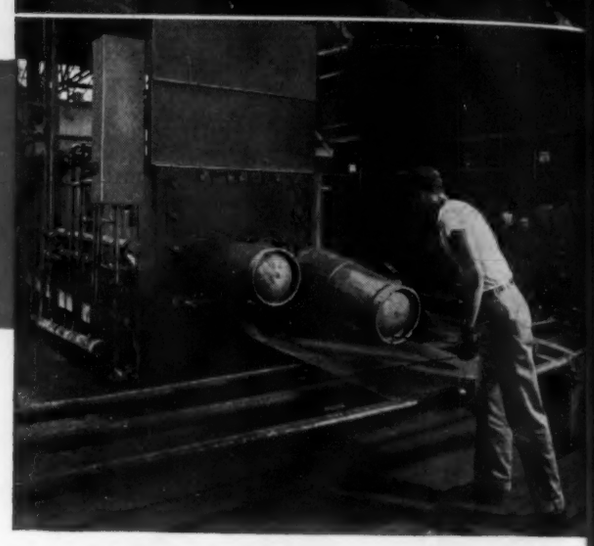
The findings of these research programs are used by Scaife engineers in the design and production of vessels to give them the qualities needed to meet the requirements of the particular service for which they are built.

The name SCAIFE on pressure vessels and deep-drawn shapes means highest quality and most advanced design.



Starting with a circular sheet of steel—

a cup is formed by a conventional drawing operation.

A continuation of this pressing operation turns the cup "inside out" without removing it from the dies,

completing—in a single stroke—the deep-drawn shape.

Deep-drawn shapes made by the Scaife reverse-draw process (described above) have uniform wall thickness throughout the entire length of the draw. Can be made in various lengths, diameters and symmetrical shapes.

Scaife cylinders are used for liquefied petroleum gases, freon, acetylene, sulfur dioxide and other materials. They are light in weight, strong and durable.

Scaife pressure vessels for air, gases and liquids are made in standard and special designs and for various types of service.

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Scaife Company

OAKMONT (PITTSBURGH DISTRICT), PA.

Reserve Tool Holders Mum on Details

Won't talk on how stored tools are easing bottleneck . . . But Iron Age survey finds at least 35,000 tools left in reserve . . . Progress notes on machine subcontracting—*By G. Elwers.*

Most government agencies holding reserve machine tool stocks balk at giving details on the extent these reserves are being put to work to help break current bottlenecks. This tendency to act mysterious was met during an IRON AGE survey of government reserves. The survey nevertheless uncovered the existence of at least 35,000 machine tools still in storage.

Excepting the Air Force, government holders of machine tools refused to tell what percentages of their original stocks are currently in defense use instead of sitting in storage. The Air Force (THE IRON AGE, Oct. 18, p. 85) is down to 5000 of its original 30,000 machine tools, and expects to have these all disposed of by the end of 1951. Data obtained by THE IRON AGE on other reserves follow:

Army—The Army says it is approaching the bottom of its machine tool reserve barrel. Most of the tools remaining are described as types not in wide demand, or having limited utility. From these reserves, though, about 250 machines a week are being leased to defense contractors.

The Army would not give the total number of machine tools remaining in its stockpile, but said they represented about ⅓ of total government reserves.

Navy—Latest Navy figures show about 19,000 machine tools and 14,000 miscellaneous equipment items still on hand. The Navy releases its tools only to Navy contractors and follows the practice of immediately ordering new tools to go back into storage as replacements.

Navy spokesmen would not say how many tools from its reserves are now in productive use, nor what the current rate of distribution to defense contractors is.

GSA—Reserve tools not under control of the Army, Navy, or Air Force are in the custody of the General Services Administration. The Munitions Board prescribes the basis for issuing these tools, and has the authority to determine who gets them.

The GSA says it has about 1300 machine tools in storage. In addition, there are perhaps 25,000 standard tools distributed by the government to engineering colleges and vocational schools after World War II. A few of these may be recovered.

Subcontracting Start—Not so many weeks ago the machine tool industry was laboring under price regulations which did not encourage subcontracting but actually discouraged it. Then finally a price order was written which recognized that subcontracting costs a minimum of twice as much as making the same equipment or parts at home, and often much more.

"Never mind the girl, Benson—Watch what you're doing."

Negotiations for subcontracting of major components and entire machines were immediately begun by many machine tool builders. The results of these efforts are now becoming apparent.

Fisher Bullards—The Fisher Body-Bullard agreement is the most-publicized and largest subcontracting arrangement so far announced. Fisher will use the toolroom facilities in several of its plants to build 50 Bullard vertical turret lathes a month.

In addition, many other subcontracting arrangements, though not announced publicly, are in the final negotiation or tooling-up stage. One substantial arrangement, due for announcement shortly, will have a Midwestern diesel manufacturer turning out two versions of a popular lathe design at the rate of more than 30 a month.

More Probables—At least two firms normally only intermittently in the machine tool field as builders of specially-engineered equipment are known to be now set for regular production of machine tools as subcontractors. A steel mill equipment maker and two printing equipment builders are also probable machine tool subcontractors.

A fertile field for machine tool subcontracting has been firms not in the business of making machinery for sale, but who either make machines for lease in connection with their business, or for their own use.

They include makers of container manufacturing, filling, and sealing machines, and shoe machinery manufacturers. These do not rate high up on priority lists for materials to build their own machines right now. So they're prime game for overloaded machine tool builders.

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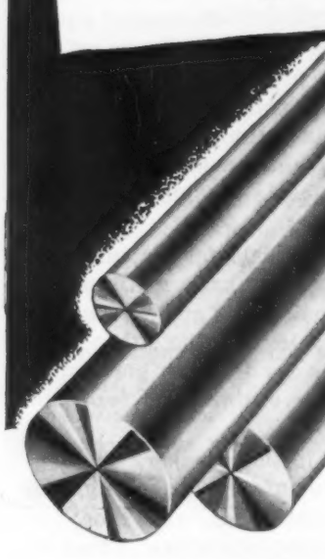

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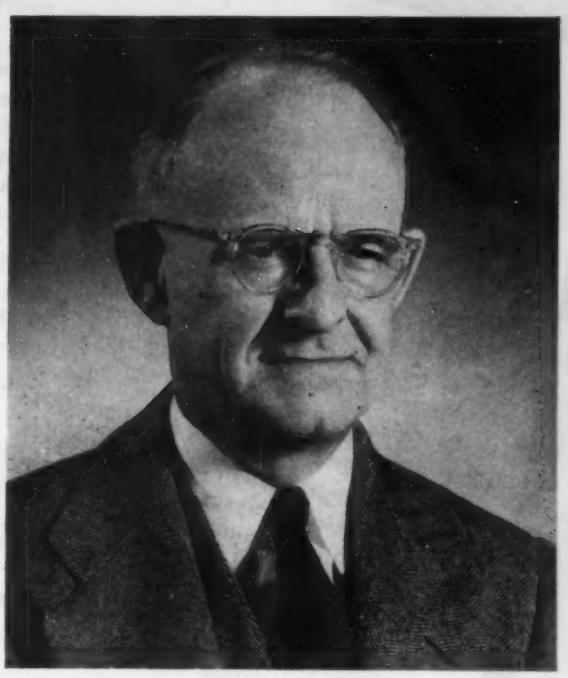
The Iron Age

SALUTES

Dr. Harry K. Ihrig



Known to the metal industries for Ihrigizing, this inventor-scientist has done important medical research.

THE creative talents of a keen mind recognize no confines. Industry and science seek out men with such talents for answers to "tough" problems.

Such a man is Dr. Harry K. Ihrig—engineering consultant, metallurgist, inventor and research scientist. He's vice-president in charge of research at Allis-Chalmers Mfg. Co. and a research professor of biophysics at Marquette University.

Harry Ihrig holds more than 20 patents in widely varying fields. One of the best known is for Ihrigizing, a method of impregnating steel with silicon.

But his researches in other fields, especially medical science, have brought important contributions to our general knowledge. Working with Marquette medical researchers he made X-ray diffractions studies of crystals for a study of silicosis and related diseases.

Cooperating in a study of the central nervous system, he developed a special press for crushing microscopic cells, and a "bomb" for testing chemical reactions under extremely high pressure. One of his most valuable projects has been development of a blood plasma substitute made from okra.

During World War II he developed a metal for use in production of high-octane gasoline—a development credited with helping win the Battle of Britain. The American Institute of Mining & Metallurgical Engineers gave him the Robert W. Hunt medal in 1947 for his many contributions and inventions.

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The Iron Age

INTRODUCES

E. Mark Nease, appointed assistant purchasing agent of PITTSBURGH SCREW & BOLT CORP., Pittsburgh.

William H. Sisson, named power industry manager of MINNEAPOLIS-HONEYWELL REGULATOR CO. Mr. Sisson will make his headquarters in Philadelphia.

Dr. Thomas R. Steadman, joined the Petrochemicals Research Department of NATIONAL RESEARCH CORP., Cambridge, Mass.

C. Fred Gibbs, promoted to the position of assistant manager of the industrial relations division of the YORK CORP., York, Pa.

Paul Harter, named chief project engineer of the industrial division of WARNER ELECTRICAL BRAKE & CLUTCH CO., Beloit, Wis.

J. W. Spoor, named general sales manager of the welding products division of A. O. SMITH CORP., at Milwaukee. **L. F. Vonier** promoted to the newly-created position of sales promotion manager.

Edward R. McLean, named manager of the planning section, nylon division, of E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.

Frank L. Driver and **Stanley M. Trocey,** elected chairman and president respectively of ITALIANA SOCIETE DRIVER-HARRIS, Milan, Italy.

Emerson G. Hammack, named manager of metal parts purchasing for the B. F. GOODRICH CO., Akron, Ohio. **J. Terry Taylor** has been named manager of the track departments of the Akron tire division. **Dalbert L. Crone** has been named production manager of the track departments.

William L. Rodich, promoted to assistant general manager, laminated and insulating products department, Chemical Div., GENERAL ELECTRIC CO., Pittsfield, Mass. After nearly 34 years of service, **Bernard C. Tracey,** manager of accessories and renewal parts sales, welding department, has retired.

Axel Johnson, appointed chief draftsman of plant engineering in the maintenance and construction department of LUKENS STEEL CO., Coatesville, Pa.

T. Y. Henry, appointed as division manager of Copperweld's new subsidiary, FLEXO WIRE CO., Oswego, N. Y.

F. Guy Rutan, named executive vice-president of WIGTON-ABBOTT CORP., Plainfield, N. J.

Leo A. Legat, appointed sales representative for northern Ohio and western Pennsylvania for the BILLINGS & SPENCER CO., with headquarters in Parma, Ohio.

Raymond H. Fara, appointed manager of the newly opened Cleveland branch office of BELGIAN ELECTRIC SALES CORP.

W. Burl Saul, named vice-president in charge of production and engineering of L & J PRESS CORP., Elkhart, Ind.

E. G. Shower, joined the staff of RADIO RECEPTOR CO., INC., Brooklyn, as chief engineer of the newly formed Germanium Div.

Charles R. Lund, appointed sales engineer in the Los Angeles district office of TINNERMAN PRODUCTS, INC.

Turn Page

ADGER S. JOHNSON, appointed president of National Carbon Co., New York, a division of Union Carbide & Carbon Corp.

DANIEL L. WERTZ, recently appointed vice-president in charge of sales of the Dow Furnace Co., Detroit.

HERSCHEL L. POWELL, promoted to the position of manager of purchases of the J. B. Beaird Co., Inc., Shreveport, La.

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Buying? If you are in the market for steel plant equipment—*Call Curry!* Whether you need a 3-Hi Breakdown Mill, a 44" Roll Grinder, a 1,000 H.P. Motor, or other equipment, we may have the answer to your requirements among our complete list of available steel plant machinery and equipment.

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Personnel

Continued

Harry H. Fair, elected chairman of the board of directors of CATERPILLAR TRACTOR CO., Peoria, Ill. **A. H. Brawner** was elected to the board of directors.

R. B. Kropf, transferred from the Cincinnati technical section to the Detroit technical section of the INTERNATIONAL NICKEL CO., INC. **C. T. Haller** has been placed in charge of the technical section in Cincinnati.

William N. Noble, appointed assistant to the president of FERRO CORP., Cleveland. **J. H. Ginther** was promoted to assistant to the executive vice-president of the corporation.

J. F. Helsel, appointed manager of the WEL-MET CO.'s plant No. 2 at Salem, Ind.

John S. Madden, appointed sales manager of the G. A. GRAY CO., Cincinnati.

Philip T. Sherman, appointed treasurer and comptroller of E. HORTON & SON CO., Windsor Locks, Conn.

Robert Waldron, appointed purchasing agent for the EASTERN BRASS & COPPER CO., New York.

J. H. Roach, named assistant sales manager of the Houston office of BABCOCK & WILCOX TUBE CO. **W. C. Mohrman,** named district salesman for the Tulsa office.

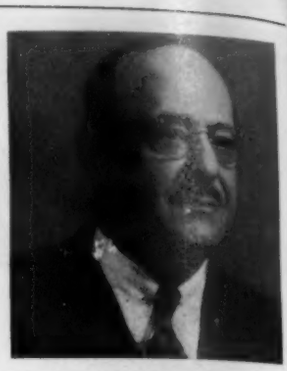
D. H. Bradley, appointed production manager, Verona, Pa., plant of the INGALLS IRON WORKS CO.

J. W. Oliver, appointed district manager for Eastern Michigan, Indiana, Western Ohio and Kentucky for CHARLES H. BESLY & CO.

James M. Stacey, appointed account executive for the AUDIO-VIDEO RECORDING CO., New York.

A. J. Shradel, appointed manager of the Seattle district sales office of CUTLER-HAMMER, INC., succeeding **T. N. Bristow** who is retiring after 23 years of service with the company.

Donald C. Burdette, appointed manager of the parts and accessories sales department, Ford Div., FORD MOTOR CO., Dearborn.



PAUL F. KOHLHAAS, appointed assistant vice-president — design and appropriation control U. S. Steel Co., Pittsburgh.

WILLIAM M. WILLIAMS, appointed purchasing agent for the Hudson Motor Car Co., Detroit.

T. A. BEDFORD, appointed as vice-president in charge of manufacturing of Kaiser-Frazer Corp., Willow Run, Mich.

FRANK A. VOTTA, JR., recently appointed chief engineer of the Hunter Spring Co., Lansdale, Pa.

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—Personnel—

Continued

J. D. Moran, appointed director of material controls; **W. J. Jones,** named supervisor of the central routing department; and **E. B. Daniels** was appointed assistant supervisor of the central routing department of CHRYSLER CORP., Detroit.

Stuart E. Brennan, named national business management manager for WILLYS-OVERLAND MOTORS, INC., Toledo.

William J. Delahanty, elected vice-president in charge of manufacturing for BURROUGHS ADDING MACHINE CO. Mr. Delahanty will have charge of manufacturing activities at all the company's domestic, Canadian and European plants.

Bert L. Pearce, named chief engineer of the Ewart plant, Indianapolis, of the LINK-BELT CO., succeeding **Charles R. Weiss** who has retired after 42 years of service with the company. **Russell T. Sweeney** has been appointed assistant chief engineer.

Donald A. King, joined PENNSYLVANIA SALT MFG. CO.'s sales-service organization in the industrial chemicals department. Mr. King will be located in Detroit.

Roy Abernethy, promoted to assistant general sales manager, PACKARD MOTOR CAR CO., Detroit.

Leo J. Pantas, appointed general manager, Stamford division of YALE & TOWNE MFG. CO. **Marvin C. Bonine** has been named to succeed Mr. Pantas as works manager of the Salem division.

R. W. Bierwagen, appointed staff assistant for manufacturing, Industrial Products Div.; and **F. R. Benedict** as assistant engineering manager of the same division for WESTINGHOUSE ELECTRIC CORP., Pittsburgh.

OBITUARIES

Henry H. Erkelenz, 72, retired vice-president and member of the executive committee of Harnischfeger Corp., in Milwaukee recently.

Walter E. Mackley, 58, manager—New York district sales of the American Steel & Wire Co.

Walter P. Carroll, 59, vice-president and director of National Lead Co., in Chicago recently. Mr. Carroll had been with the company for 41 years.

The Iron Age
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More Technical Articles

TITANIUM OXIDE now available

Canadian ilmenite mine completes first full season

Part I

By D. I. Brown
Technical Editor

The Quebec Iron and Titanium Corp. shipped 340,000 gross tons of ilmenite from the Allard Lake mine this year. The ore contains about 35 pct TiO_2 and 40 pct iron. The deposit is the only large field of a hematite-bearing ilmenite ore known. The ore deposit contains over 120 million gross tons of proven reserves based on most recent drillings.

The author spent a week in Canada studying the mining and smelting operations. Havre St. Pierre, site of the ore dock, is roughly 600 miles northeast of Montreal.

Back in 1941 when the famous Canadian government geologist J. A. Retty* made a routine report of outcroppings of high-grade ilmenite, titanium ore, in the Allard Lake, Quebec, area, nobody became too excited. The huge postwar demand for titanium dioxide in the States and the lack of enough good titanium ore on this continent, however, soon changed things radically.

In 1944 R. J. Parker and Anton Gray of Kennecott Copper Corp. decided to fully investigate the possibilities of Allard Lake ilmenite. A trip to the ore field inspired the formation of Kennco Explorations, Ltd., and from then on R. J. Parker sparked the project which many other American companies had previously turned down.

In May, 1946, Kennecott Copper Corp. dispatched Kennco Explorations, Ltd., to Allard Lake who within a few weeks found the main ore body, later estimated to contain over 100 million gross tons. Since then the area has been one of feverish activity.

The Quebec Iron and Titanium Corp. was formed jointly by Kennecott Copper Corp. and New Jersey Zinc Co., with Mr. Parker as president, in 1948. To date the company has spent about $15 million on the ore properties alone. The 28-mile railroad from Allard Lake to Havre St.

*Mr. Retty also discovered the fabulous iron ore body at Burnt Creek, see The Iron Age, Nov. 4, 1948, p. 155

Pierre, site of the shipping dock, on the northern shore of the St. Lawrence River, was completed in December, 1950. The first full season of mining has just been completed with 340,000 gross tons of badly needed titanium ore shipped from Havre St. Pierre 550 miles up the St. Lawrence River to the smelter at Sorel.

The ore contains from 35 to 36 pct TiO_2 or "titanium white" and is the only large deposit of this particular type of ilmenite known. Along with titanium, the ore also contains 40 to 42 pct Fe_2O_3 classed as a hematite-bearing ilmenite.

At Sorel the ore is smelted and the TiO_2 is tapped as a slag. The byproduct of this process is molten iron and both products are finding a ready market. The pigment industry, which uses TiO_2 in paints and enameling frits, will take all the TiO_2 slag Quebec Iron and Titanium can produce and the steel plants and foundries of Canada can well use the low sulfur iron. Thus Canadian resources plus American dollars and ingenuity have in 5 years vastly improved the domestic supply of titanium.

Continued expansion expected

This new basic metal development may profoundly affect the international market too, as much of the former TiO_2 bearing material used in this country was imported as rutile and Indian ilmenite. These developments, along with metallic titanium, the newest and fastest growing metal industry in the States, means that continued expansion of ore output and smelting capacity can be expected.

The main ore body, known as the Lake Tio deposit, comprises about 900 acres. Secondary deposits of good ore covering another 968 acres have been staked and exploratory drilled. Other deposits of lower grade have also been staked out. The coal-black, hard ore occurs as massive rock, containing sharply defined small kidneys or inclusions of anorthosite stone. The overburden over most of the field averages about 4 ft. The main ore body is over 300 ft deep with at least 50 million tons located above the railroad grade which can be easily bench mined.

Rising from the shore of Lake Tio on the western side and on the extreme southern end of the main deposit is a small mountain of ore. This part of the Lake Tio deposit, "The Cliff" rises sharply to 180 ft above the Lake and is a tabular mass if ilmenite containing about 12½ million gross tons of ore. The Cliff ore body is about 1250 ft long and is abruptly bordered on the north and south ends by equally massive horses of anorthosite or feldspar. There is no burden at all on the top or steep side of the Cliff deposit which has an average width of about 750 ft.

First ore hand mined

The first ore taken from the main deposit was hand mined during the winter of 1946 and 1947. Via horse, dog sled and finally float plane, about 100 tons were taken out that winter from Allard Lake. This ore was sent to the Palmerton, N. Y., plant of New Jersey Zinc Co., who developed the smelting process now in operation at Sorel.

The first major shipment of ore started in August, 1950, and about 90,000 gross tons was shipped that year. This ore was mined from a secondary deposit called "Grader." Operations were started there because the rail line to the main field was not yet completed. Grader ore, as well as that of the main and Cliff deposits, all contain 88 pct ore or better. Some of the lesser deposits average but 40 pct ore but at least 120 million gross tons of 82 pct ore have been proved in the main deposits.

Operations continued all during last winter: Finishing the rail line and constructing the ore dock terminal at Eskimo point in Havre St. Pierre and further exploratory diamond drilling in the main deposit.

From late April to June this year, ore was taken out of the small Grader deposit and shipped to the crusher at the dock area. In June all min-

ORE DOCK, jutting out into Eskimo Bay at Havre St. Pierre, is the terminus of the 28-mile railroad from the mine. The crushed ore in the stockpile is fed up into the tower loader by belt conveyer.

ing was shifted 2 miles north to the Lake Tio area.

At the end of the season, Quebec Iron and Titanium was mining 1500 gross tons a day from three 25-ft high benches cut into the main deposit. The fourth bench to the top of the main deposit is now nearing completion. So far wagon drilling and blasting has been used. A Quarrymaster machine will be put into operation next spring. All power is diesel generated at the mine itself. Drilling is done with 1½-in. steel bits. The major mine equipment consists of two Dominion 1½-yd diesel-electric shovels and a 3½-yd diesel-electric Marion shovel. Four 15-ton Euclid diesel trucks bring the blasted ore down the benches to the stockpile area from which it is loaded into the rail cars.

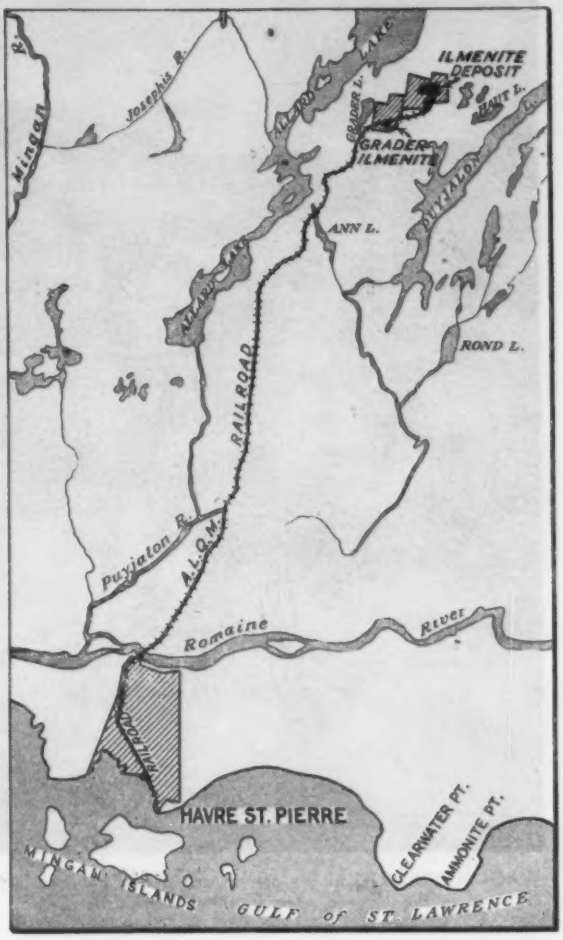
Each rail car carries 53 gross tons of ore and the 1000 hp diesel-electric locomotives pull 14-car trains down to the crusher at Havre St. Pierre. A new crusher building is under construction at the mine and next year all crushing will be done on the mining site. When the new crusher starts next spring, the trucks will haul from the fourth bench and dump directly into a large jaw crusher. Rough size material will go by belt through a Cone crusher and the minus 2-in. sized ore will then be conveyer loaded into the cars.

Building railroad tough job

The cars upon reaching the terminal will dump into stockpile from which it is belt conveyed to the tower loader at the end of the dock. The ore is loaded from the tower into the 10,000-ton ore boat. Ship loading averages about 7 hr.

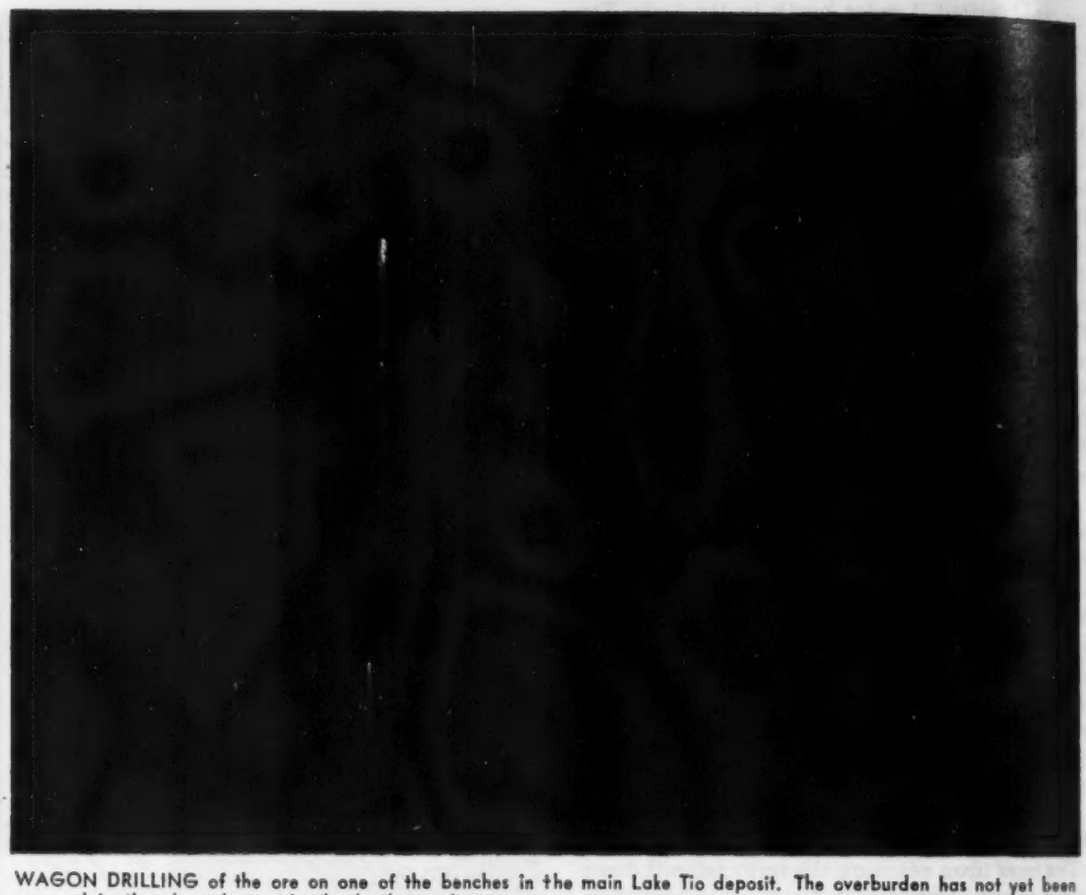
Possibly the toughest job was building the 28 miles of standard gage single track railroad. Fraser Brace Eng. Co., Ltd., of Montreal, constructed the rail line over difficult terrain. The first 2 miles north are level sand followed by 3 miles of muskeg bog. About 130,000 cu yd of muskeg excavation was required. Over ½ million cu yd of rock fill and almost the same amount of earth and sand were used to construct the road bed.

Going north beyond the muskeg bog, the railroad crosses the Romaine River with a 1600-ft steel span. North of Romaine was more muskeg, then clay



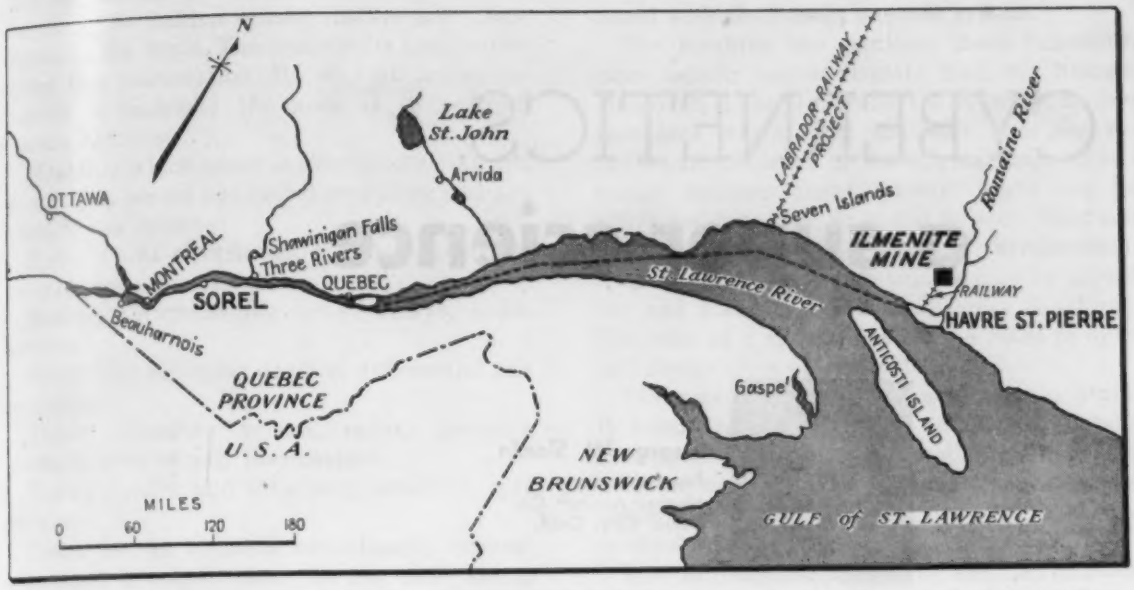
ALLARD LAKE ILMENITE is concentrated in the two major deposits shown. The Grader deposit is not being worked as all operations have been moved north.

MAIN CAMP at Allard Lake houses the construction crews and some of the miners. The rest of the miners commute to the field from Havre St. Pierre via diesel electric train (foreground).



WAGON DRILLING of the ore on one of the benches in the main Lake Tio deposit. The overburden has not yet been removed in the cleared area in the background.

LOADING THE CARS is done by shovel from the stockpile. The 15-ton trucks bring the ore down from the three benches and dump it into the stockpile at the left.



ILMENITE ORE is shipped from Havre St. Pierre, 550 miles up the St. Lawrence to the refining plant at Sorel. One smelting furnace is already operating at Sorel with four others under construction.

More titanium oxide (continued)

and rock before the real rock country was reached. From here on they blasted most of the way into the Lake Tio site. Other major construction on the line was a 156-ft span over the Puyjalon River and a 700-ft tunnel through solid rock. Fills as high as 125 ft were necessary in places to maintain proper grade. The northern grade of the rail line is 2 pct max. The steepest grade coming south with loaded cars is 1½ pct. The rail line cost $7½ million to date. Further work is being done to improve the road bed.

Until recently mine personnel, most of which live in Havre St. Pierre, commuted to the mine in box cars. In August a standard railway coach was brought in to afford better transportation of the workers to and from the mine.

The once sleepy village of Havre St. Pierre, population 1500, is somewhat reluctantly awakening to the pulse of modern industry. They were fishermen or loggers or unemployed, as fitted their convenience—before ore. Regular working hours were not their habit so that it was difficult to maintain a consistent laboring force of local workers at first. However, many natives have transformed and are now accustomed to a working day, handling mechanized equipment and accepting the responsibility of specific tasks. Sporadic attacks of "Bushitis," once common, are now rare.

Electricity was another major change in the lives of the French townspeople, available to them in quantity for the first time when the company installed a 500-hp diesel generating plant. Modern plumbing, regular mail service and a small dirt airport were other innovations which have radically changed their mode of living. The airport strip had hardly been cleared before the town achieved the exciting distinction of having the smallest airstrip on which a USAF jet plane ever made a perfect crash landing.

Havre St. Pierre's unusual growing pains are understandable—a half century of industrial progress suddenly came in one day with the tide. A new school has just been finished, modern houses are under construction, the population is growing and the town is starting to take interest in the rest of the world—realizing the free world is vitally interested in her.

All photos in this article were supplied through the courtesy of the Canadian Metal Mining Assn. The photos were taken by George Hunter of Ottawa.

NEW BOOKS

"Phase Transformations in Solids." As an outgrowth of a symposium held at Cornell University in 1948, important papers on the subject of phase transformation were compiled and edited for the present book. The first section deals with theory, the second with nonmetals, the third with metals. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $9.50. 660 p.

"The Structure and Mechanical Properties of Metals," by Bruce Chalmers, provides a simple explanation of the structure of metals, alloys, and the relation of their structure to mechanical properties. While the reader is assumed to have an elementary knowledge of chemistry and physics, mathematical considerations have been left out. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $3.50. 132 p.

CYBERNETICS, a super science

George W. Slomin
Process Engineer
Hughes Aircraft Co.
Culver City, Calif.

Increased use of robot controls in industry has created special problems. Development of aerodynamics, electro-chemistry and other hybrid sciences poses questions which can only be solved by cooperative efforts among sciences. Cybernetics will make sciences more understandable to each other. Industry will benefit by better machine designs, more rapid solution of production problems.

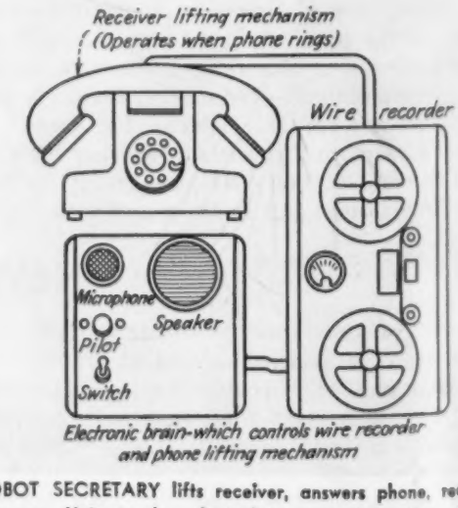
Production methods in the past 50 years have undergone many changes from the first crude methods of producing automobiles. Manual controls have been replaced by automatic control devices. Today we have machining, heat treating, inspection and other production processes which require such precision that manufacturing would be impossible without modern robots. These mechanical "brains" enable an operator to concentrate on elements of the operation that require undivided attention.

Cybernetics, a new science, has come into being to meet the many new problems connected with the development of robots. We are approaching an era where individual sciences cannot solve special problems associated with design of robots. Human behavior is a psychological problem and few engineers are psychologists.

Cybernetics is designed to fill in the missing links between other sciences. It will guide research and development in the production of servomechanisms that can perform simple routine decisions. A number of these devices are in existence. Some can perform several functions in orderly combination. Examples are the robot secretary and the electronic digital computer.

Under a cybernetics program the operator's temperament, reflexes, and other operational characteristics are studied by a psychologist. These are evaluated so a coordination program can be instituted to design equipment, conditions and automatic controls to fit the total behavior of the operation and the operator.

A cybernetics program first compares the five human senses with their chemical, electrical



ROBOT SECRETARY lifts receiver, answers phone, records message. Unit can be adjusted to give information only to those persons giving correct signal.

and mechanical counterparts. Impressions received by the human sensory nerves are transmitted to the brain. The brain sorts and coordinates this information. By way of the motor nerves, it instructs the muscles to perform certain functions.

Machines which react to stimuli affecting the five human senses are called receptors and are classified as follows:

Sight: Photo-electric cells, radar receivers, telemetering devices.

Hearing: Microphones, sound relays, audio systems.

Smell: Gas detecting devices, differential gas analyzers.

Touch: Capacity relays, radar, pressure gages, thermometers, thermostats.

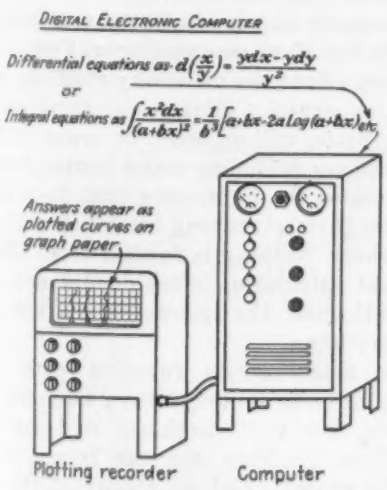
Taste: Acidity and alkalinity detectors (pH meters).

These devices measure and classify impressions and transmit them to the next stage, where they can be acted on or stored for future use. Storing of information is analogous to memory and is accomplished by time delay devices, chronometers, etc. The information may be stored for a fraction of a second or for as long as required.

The electro-mechanical memory, unlike its human counterpart, never forgets. It never plays the psychological tricks the human mind plays, that of distorting memory.

Information usually goes next to a computing device. The computor carries out in sequence the orders it receives. This unit, a servomechanism, usually consists of intricate electronic circuits.

After the information is sorted out, actuators, such as motors, hydraulic valves, solenoids, stepping switches, sound systems, recorders, explosive charges, take action. Wires that transmit and distribute the impressions can be compared with the human nervous system.



DIGITAL ELECTRONIC computer can solve complicated mathematical problems in a fraction of the time it would take expert mathematicians.

The machine can perform these functions, more rapidly and accurately than any human. Moreover, it can transform the information into functions which need not bear even the remotest resemblance to the original impressions except perhaps quantitatively. Light can be converted into heat, or sound or both. Heat can be converted into cold through refrigeration. Sounds of different frequencies may be sorted out and made to perform different functions. The odor of a special gas can be made to open and close valves or safety doors.

The servomechanism is an electronic brain. It separates receptors and actuators. To take intelligent action the unit must do rudimentary thinking to combine impressions into a control pattern which will produce the desired response in the actuators.

The thinking and computing abilities of these servomechanisms must be built into them by their designers. The completed system should be able to detect a sequence of measurable events, classify them and provide the components of motion required to carry out orders to the actuators which perform the final operation.

Cybernetics cell groups specialists

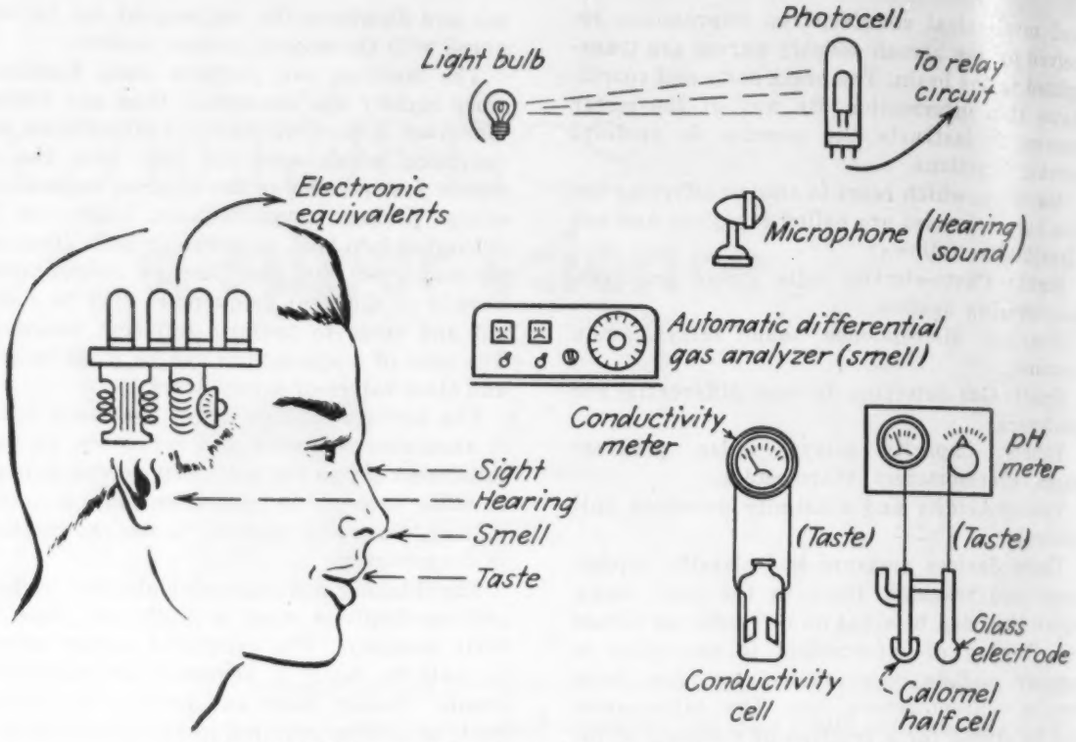
Organization of a cybernetics cell involves assembling a group of scientists, each a specialist in his field.

But we find the psychologist is in the dark about mechanical engineering. The mathematicians know nothing about electrochemistry. Electronic engineers have no knowledge of psychology. The empirical nature of scientific research is clearly indicated. The jargon of one group is a foreign language to another. There is no standardized inter-scientific terminology.

One purpose of cybernetics is to correct this condition. Almost any specialized program requires a qualified director. A person with the broadest possible background, especially in psychology, should be selected. He should have a working knowledge of chemical, mechanical and electrical engineering procedures.

A system of education for these members should be devised so their knowledge and experience can be expanded into as many fields as possible. A strenuous program is not recommended because it is important to retain and not weaken a member's ability in his own field. The pattern of study in related fields of other members by each individual will produce a smoothly working cell where many brains can function as one.

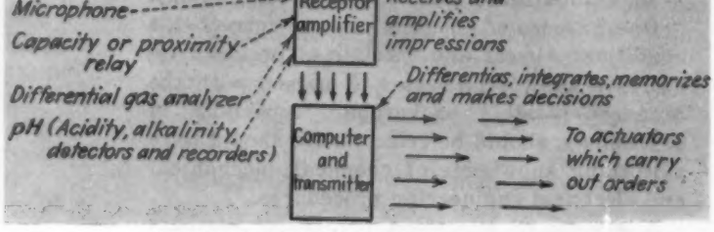
The latest developments in electro-mechanical thinking devices are automatic computing machines. These solve problems in differential and integral calculus in a fraction of the time it would take the world's best mathematicians. The information enters the machine through



HUMAN SENSORY nerves have electrical, chemical and mechanical equivalents. These non-human receptors are far more accurate than their human equivalents.

Cybernetics (continued)

several individual circuits. If any circuit fails the results will not agree, and the operator will immediately know something is wrong. Many machines have indicators which locate the trouble.



SERVOMECHANISM RECEIVES impressions at receptors. These go to receptor amplifier, then to a computor. Computor sorts information and, in prearranged sequence, transmits instructions to actuators.

One of the poorest qualities of the human mind is memory. It plays more psychological tricks than any other human attribute. One of these is distortion of stored information. The electro-mechanical memory never makes these mistakes, unless someone turns off the current.

Telemetering can be compared with extra sensory perception. It is possible to receive information over long distances through the medium of telemetering which is not possible by using the five human senses directly.

Manufacturing difficulties arise frequently in any organization. Three factors, materials, personnel and equipment, can cause these difficulties.

Can save design time

Usual trouble shooting methods are often ineffective. The cybernetics group is specially qualified to locate the trouble with minimum lost time.

A design is usually a configuration of many components. A design which evolves through the cybernetics group needs fewer changes. The design can be completed more rapidly at a savings in time and effort.

At present, this new science will be of little value to the small manufacturer. Few organizations can afford the necessary staff. As interest grows, cybernetics clinics, operating on a consulting basis, will no doubt be organized.

Robots are replacing many human functions. This creates the impression that factories will soon run themselves, and machines will replace all workers. Nothing is further from the truth. The first calculating machine did not replace the bookkeeper, the typewriter did not replace the secretary.

Some machines do function with greater speed and more accuracy than humans. These, however, are still machines and subject to limitations. Nothing man can invent can surpass the overall thinking ability of the human being. The world has made great progress in all sciences during the last half century. Now we are entering an era in which all sciences will be combined for further progress.

New Generators Save Copper, Steel

A new generator design announced by Westinghouse Electric Corp. permits generating more electric power while using less copper and steel in the generating equipment. It also reduces the physical size of generators, lowering foundation and building costs for power plants. On the other hand, the new design permits raising the maximum rating of generators above present practical limits.

Key to the advantages of the new design is the use of hollow conductors through which cooling hydrogen is passed. This permits much more efficient cooling than has ever before been possible since the gas picks up heat directly from the copper conductors, instead of having to pick up heat which has been conducted through the electrical insulation.

Heat transfer governs capacity

The amount of heat produced in an electrical conductor through which current flows varies with the square of the current amperage. The limit on the amount of current an electrical machine like a generator or motor can carry is governed by how fast the heat can be removed. By removing heat faster, more current can be permitted to flow. In the case of a generator, an increase in generating capacity of a given size can be gained by faster heat removal, without increasing the number or size of conductors and thus the size of the machine.

Early attempts at heat removal used blower-circulated air. Later, for large central station machines, it was found practical to use hydrogen as a cooling gas instead of air, because of its lower density and better heat transfer characteristics. Recent improvements in generator cooling consisted mainly of increasing hydrogen pressure and velocity of flow. Fig. 1 demonstrates that there is little gain through increasing pressure with the standard rotor.

But with the hollow conductor design, increased pressure greatly increases the allowable ampere turn rating, as Fig. 1 shows. This is due to the greatly increased heat transfer efficiency due to the direct gas-copper contact.

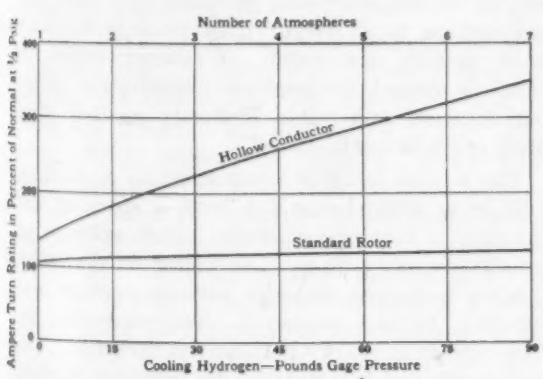


FIG. 1—Increasing hydrogen pressure gives little gain in capacity of a conventional generator. But as upper curve shows, hollow coil generators gain substantially in ampere turn rating as hydrogen pressure increases.

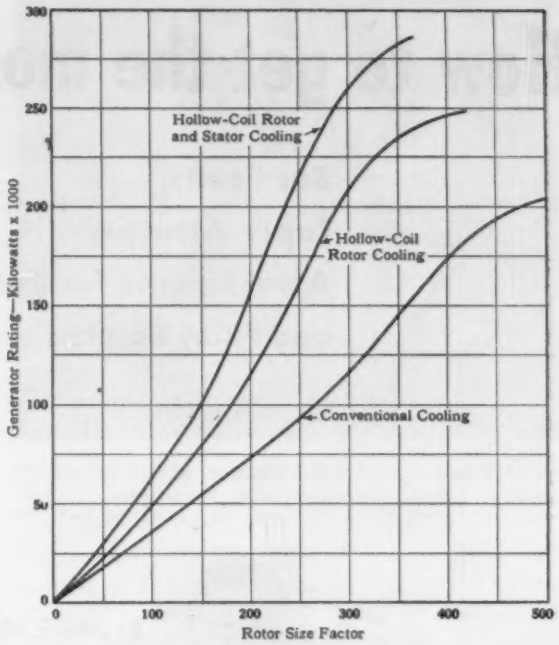


FIG. 2—Increase in rotor size, and consequently in the amount of copper and steel needed, is less when hollow coils are used for increasing generating capacity.

Fig. 2 demonstrates the size reductions possible through use of hollow conductors. Various problems make it impractical at the present time to utilize hollow conductors in the stator as well as the rotor, so a curve is shown for hollow-coil rotor cooling alone. Eventually, both rotor and stator will have hollow coils, giving gains, shown by the top curve, Fig. 2.

Bearing losses lower

The increase in copper losses due to the new design will be more than balanced by the reduced bearing losses due to lower rotor weight. Of other losses, increases in some are also about balanced by decreases in others, so that overall performance efficiency of the new design will be about the same as that of conventional machines.

The new design appears to make ratings of 250,000 to 275,000 kw possible for 3600-rpm single-unit generators, well above practical conventional limits. More important, it will be possible to increase ratings by about one-half without using more copper or steel.

A similar cooling system was recently announced by the Allis-Chalmers Mfg. Co. (THE IRON AGE, Oct. 11, p. 67). An Allis-Chalmers generator using high-velocity hydrogen cooling directly over the conductor surfaces is now in use at the Edgewater plant of the Wisconsin Power & Light Co., Sheboygan, Wis.

How to get the most from your lathes

Bar Feeds, Taper Attachments, Attachments for Radius and Fillet Turning.

No. 5 of a Series

By John E. Hyler
John E. Hyler & Associates
Peoria, Ill.

Special attachments convert the ordinary engine or bench lathe for work which otherwise might require purchase of an extra machine. Such lathes can be equipped for milling, coil winding, relieving, slotting and radius and fillet turning. Taper attachments, and pneumatic bar feeds, help increase production and versatility.

PREVIOUS ARTICLES IN THIS SERIES

August 16, 1951, p. 97

Drives, toolholders, tool grinders, special cross slides.

August 23, 1951, p. 69

Centers, tailstock turrets, collets, chucks.

September 20, 1951, p. 120

Magnetic chucks, special mechanical chucks, air cylinders.

October 25, 1951, p. 108

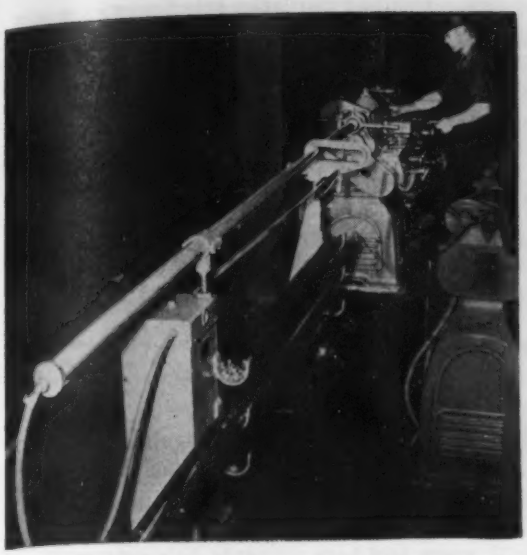
Grinding and marking attachments, sub-headstocks, honing and superfinishing devices, constant surface speed equipment.

Employment of pneumatic bar feeds has been steadily growing since their development a few years ago. Their use is not limited to the automatic screw machine; they often are applied to engine lathes. This is done on production operations where a suitable stop can be arranged to limit forward travel of the material, and where a collet is employed for stock being machined.

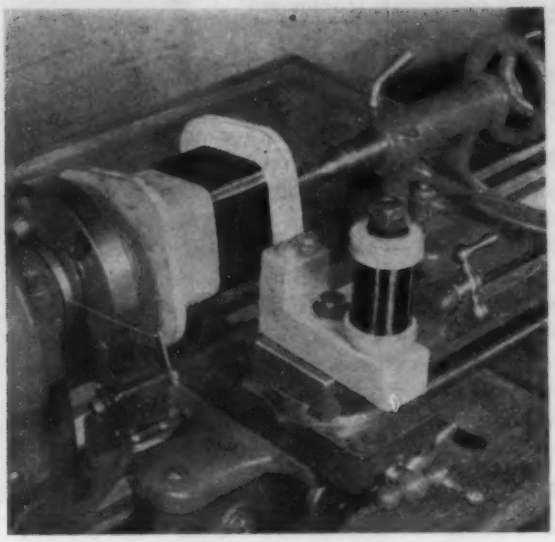
Such a bar feed will take a 12-ft bar, regardless of its shape or size, provided only that the bar section is no larger than passage through lathe spindle and collet. Whenever collet or chuck is opened, air pressure immediately forces bar forward and holds it firmly against stop until collet is again closed.

The engine lathe is often used as a winding unit, wire often being fed from a spool or coil through a tensioning device. Coil springs of practically any type may be wound on the lathe, holding a dogged mandrel between centers and winding the wire around it. The tensioning device used is generally held on the carriage. The lead screw and half nuts of the lathe are used to obtain uniform lead.

Since thread-cutting lathes have exceptionally wide range of longitudinal carriage feeds per spindle revolution, the lathe can be winding



PNEUMATIC bar feed in use on an engine lathe. Device will handle bars of any shape, up to 12 ft long. When collet or chuck open pressure forces bar forward.



COIL WINDING on an engine lathe. Forms are easily made of wood. Attachment maintains proper tension. Counter attached to headstock keeps track of number of turns.

electrical coils. A revolution counter may be attached to the machine to count the number of turns wound. If special leads are required for coil winding, not available through standard lathe gearing, special change gears may be attained. Various kinds of coil forms and wire guides are available.

Some manufacturers provide a coil winding attachment to replace the toolpost on the lathe compound. This device is provided with a wire guide of fibre, and has a spring adjustment on the wire spool to provide correct tension on the wire.

Winds solder spools

One adaptation of lathe winding is the use of a standard lathe with an electronically-controlled measuring device for solder winding. The measuring unit is designed to work along with an electric braking mechanism mounted on the lathe. Wire-type solder is wound in 1-lb rolls. The layout makes it possible to wind almost as much solder in an hour as was formerly wound in a full working day. In addition, weight accuracy is within ⅛ oz.

There is a class of lathe tools entirely distinct from ball turning rests, which nevertheless are adapted for radius and fillet turning. Some of these are designed for holding in a lathe toolpost. Others replace the toolpost. Either type may be employed on most lathes.

Radius tools for holding in the toolpost and for making concave cuts are used in two different sizes. One will machine any radius in a range from ½ to 2 in. The other will handle a minimum radius of 1 in. and a maximum of 3 in. There is a very similar tool designed for machining convex radii, also held in the toolpost. It will turn balls or radius cuts of any lesser scope from ⅛ to 2½ in.

These tools have a shank for holding in the toolpost in the regular manner. In front of the toolpost, however, the tool shank is designed to sweep downward and terminate in a special holder for a revolving tool head which carries the tool bit. The tool head is fitted with an enclosed worm wheel. Extending out from the side of the holder, to the right hand of the tool shank, is a manual feed knob. This knob is integral with a worm that engages and revolves the wormwheel, thereby swinging the tool head, and with it the cutter.

On the type of fillet and radius turning attachment which mounts directly on the lathe compound, there is a long horizontal cutter bar which swings as a complete unit. That is, every point on this cutter bar swings through an arc of the same value. The tool bit is held in a special underslung toolpost at the forward end of this cutter bar. Due to the circular swinging action, the tool bit and toolpost remain rigid in their relationship to the bar. The tool bit is adjustable in the toolpost, however, for cutting either to right or left.

Cutting radius adjustable

The cutter bar is mounted on two vertical-axis crankpins which are integral with two horizontal, dovetailed slides beneath the cutter bar. These slides are longitudinally adjustable within two driving discs, which are revolved by the action of a hand crank on the rear end of the attachment. The slides can be set in the driving discs to bring the vertical-axis crankpins concentric with the driving discs. When this is done, turning the handcrank will impart no movement whatever to the cutter bar.

Or, the slides may also be set to advance the crankpins to any selected degree of eccentricity with the driving discs. The amount of eccentricity determines the radius upon which the point of the tool bit will be swung. Maximum

capacity for the model generally employed is a radius of 2⅛ in.

There are cases in which a shaft straightening unit is employed in connection with the engine lathe. These are hydraulic devices, available with pressure capacities ranging from 35 to 160 tons. The base of such a unit is provided with four machined wheels. These are readily adjustable so they will fit between the vees of any lathe bed. The top of the base has two integral resistance anvils. These anvils have concave tops, to automatically center any shaft directly beneath the overhanging, vertically-acting hydraulic ram.

Rack and pinion position ram

A workpiece is dropped from the lathe centres, after determining the point of greatest run-out and running the straightener along the lathe bed to this point, onto the resistance anvils. Vertical positioning of the hydraulic ram is accomplished by a rack and pinion device. Therefore the hydraulic pump need be operated only while actual straightening is in progress.

Various types of milling attachments and accessories have been developed for lathes. At least one manufacturer provides castings for lathe milling attachments which are only partly machined, it being possible to finish them up on the lathe where they are later to be used.

It is possible to rig a special work-holding attachment on the lathe cross slide, and to carry a milling cutter on a mandrel held between lathe centers. One lathe manufacturer supplies a work holder of this general type for his machines. The attachment is handy for special gear cutting and other divisional work, as well as for more ordinary milling. The work can be given either cross or longitudinal feed to the cutter, through the regular lathe-feed functions. The particular lathes involved have power cross feed as well as longitudinal feed.

The opposite idea can be used also, holding the workpiece in a lathe chuck or collet or on a lathe faceplate, and rigging up a cutter-carrying attachment on the cross slide or on the compound. When this is done, a separate drive for the milling cutter must be arranged. Divisional work can be accomplished in this manner also, provided the lathe is equipped with an indexing plate at the headstock.

Make lathe vertical miller

In some instances it is practical to convert an engine lathe into a vertical milling machine. Special supports are positioned at the two ends of the lathe bed, clamping on the lathe ways. These hold two parallel rods in horizontal position. On these rods, a sliding yoke for the machine chuck and end mill is mounted, with a pulley mounted on the spindle above the chuck.

Two idler pulleys are positioned above the righthand end of the lathe spindle, and the lathe spindle itself accommodates a driving pulley. Thus, what has often been called a mule drive is arranged, which drives the vertical-axis pulley on the attachment directly from the horizontal lathe spindle.

In this case, the lathe compound is removed from the cross slide, and a workholding accessory is substituted. The milling cutter spindle is provided with down feed in thousandths of an inch, and has a 3¼ in. vertical travel.

Milling attachment also bores, reams

A different type of lathe milling attachment has been developed for 9 and 10 in. lathes. It is designed to mount on the cross slide in place of the lathe compound. While primarily for circular and radial milling, milling of cams and like work, this device also does fly-cutter facing, and will drill, ream and bore accurate hole patterns.

The attachment consists of a spindle housing with a base, designed so the contained spindle will have its axis horizontal. The spindle is provided with a through hole for bar stock. It also has a standard taper for lathe collet equipment.

At the rear end of the spindle is a worm-wheel. This meshes with a worm revolved by a hand crank. There is a spindle nose to accommodate the standard lathe chucks used on 9 and 10 in. lathes. The cross slide feed of the lathe provides accurate positioning for workpieces. The entire attachment can be rotated as desired on the cross slide to perform work at any angle with the lathe spindle.

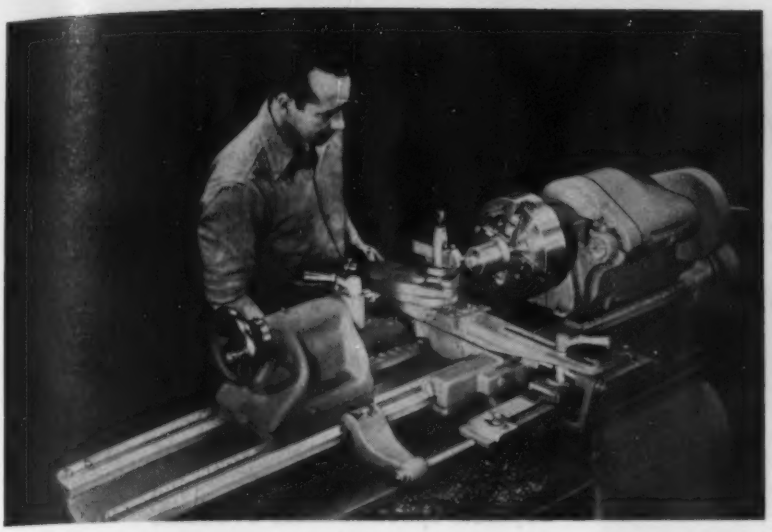
Milling attachments of the type carrying a cutter on a column on the lathe cross slide, mounted in place of the lathe compound, are valuable for milling work held on a lathe faceplate or in a lathe chuck. In some instances these are provided with auxiliary attachments for work one would scarcely expect to mill on a lathe.

Thread milling auxiliary available

One such milling attachment is capable of receiving a thread milling auxiliary. The composite attachment is employed for milling screws, worms and hobs, through a wide range of pitches and thread forms. The same basic attachment can also be fitted with an auxiliary which makes it suitable for milling spiral flutes, grooves and slots of very long lead.

Mechanics depend more and more on taper turning attachments for the engine lathe. Such attachments practically always incorporate some kind of guide that can be set at selected angles of obliquity with the line of lathe centers. Usually a slide block or similar unit is designed to engage and follow the guide.

The block is in turn connected to the cross slide of the lathe. Movement of the cross slide is governed, consequently, by the guide, automatically incorporating the angle of its obliquity into the work taper. Included angle produced on the workpiece is thus twice as great as the angle



ENGINE LATHE fitted with telescopic type of taper attachment. Attachment is permanently fixed to rear of lathe, does not affect straight turning and boring.

between the line of centers and the guide.

Some smaller lathes are provided with a device of this general nature incorporating a connecting bar. In order to use this type of taper attachment, it is necessary to disconnect the cross feed screw to leave the compound rest base free to slide.

In most instances, especially on larger lathes, a telescopic action is incorporated in the mechanism. This eliminates necessity for disconnecting the cross feed nut. Taper turning and boring are accomplished as readily as straight turning on lathes fitted with an attachment of this kind. Left permanently on the lathe, it in no way interferes with straight turning operations.

Another lathe taper attachment, also of the telescopic type, is provided with a micrometer screw for adjustment. Machining either right or lefthand tapers, this attachment has a capacity of 3½ in. of taper to the foot, or a 15° included angle. Tapers 18 in. in length can be turned at a single setting.

One manufacturer provides two types of taper attachments. One has plain bearings, while the other incorporates ball bearings. Both have telescopic cross feed screw control. A square-section bar atop the swivel forms the guide on this attachment. There is a sliding shoe which fits over and slides upon this bar. A sensitive adjustment for the swivel and its taper bar is provided, by means of a knurled knob operating a fine-pitch adjusting screw.

Taper attachments valuable

Taper attachments for lathes are highly valuable for both taper turning and taper boring with power feed. They may also be considered the only really accurate means of cutting taper threads. One taper turning attachment has its swivel equipped with a magnifying glass for more accurate setting. It has capacity of 4 in. of taper per ft and is provided with ball bearings. This attachment can be provided with an auxiliary known as a taper-attachment variator. It consists of a single gear box containing pick-off gears; together with a rack which controls motion of the taper-attachment slide.

Through use of the variator, the degree of taper which can be turned or bored is increased. Length of taper that can be turned at one setting is increased to the length capacity of lathe. And, the variator provides a pantographing means for contour turning and boring from a master template. Three different change gear sets are provided, which will provide maximum included taper angles of 37°, 53° and 67°.

Commutator undercutting done

Where armatures are to be serviced, a mica undercutting attachment for the lathe is of great value. The usual arrangement is to mount the attachment on the rear end of the lathe cross slide. An arbor, carrying a very small-diameter saw, extends horizontally over the workpiece at a right angle to the line of lathe centers. The little saw is fed through the mica by turning the lathe-carriage handwheel. The new grooves produced are clean, square, parallel and uniform in depth. The attachment has an elevating screw operated by handwheel. By this screw, saw arbor height is adjusted for any given armature.

Relieving attachments are provided by different manufacturers. The basic idea of a relieving attachment is that of providing a fast, short reciprocating motion. This reciprocation is given to the cross slide, or to a sliding unit atop the cross slide. Thus the tool will relieve the backs of teeth on cutters to provide cutting clearance, or will relieve flutes on large taps and like work. Where cutters are being side-relieved, a slight motion must be given the tool parallel to the line of lathe centers.

Some relieving equipment is for plain or radial relieving only. Other is more universal. An auxiliary drive is required, from which the cam-actuated reciprocation is derived. On much of this work it is necessary to reduce the lathe spindle speed, spindle speed reducers being em-

SMALL LATHE equipped with special drive and mica undercutting attachment for servicing electric motor commutators. Tiny cutter is at tip of motor spindle.

ployed. Facilities are often incorporated which allow the amount of relief to be adjusted.

One relieving attachment includes equipment for helical or spiral relieving, as well as for straight relieving. This may be either external or internal. In addition, face or end relieving may be performed. Facilities are provided so rise of the relieving cam can be accurately set to match flutes to be relieved. The relieving-attachment slide is reciprocated by the cam through an adjustable follower.

One relieving attachment is for special form cutters, taps and hobbing cutters. The amount of backing off can be adjusted. Close attention has been given to keeping the weight of moving masses at a minimum. Consequently, a speed of 300 teeth or 300 cutting impulses per minute is possible.

A relieving attachment is made which will perform internal and external, right hand and left hand, plain angular, end, and spiral relieving. Change gearing is regularly supplied to relieve work having 2 to 24 flutes.

A single-lobe cam has been employed all the way through. On cams having more than one lobe, it is possible for one lobe to wear slightly more than another. When this occurs, it results in producing corresponding variations in the amount of relief on different flutes or teeth of the workpiece. A single lobe on a cam evidently cannot differ from itself, whatever the nature or degree of wear occurring. In this attachment, prevision setting for the amount of relief desired is obtainable.

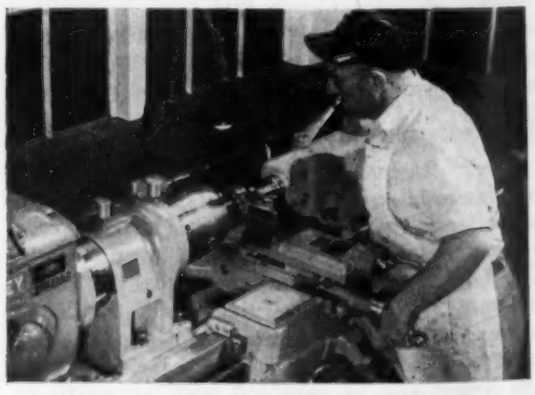
In some cases it is found necessary to lower spindle speed in connection with use of a relieving attachment. A two-speed motor can be used, or, an 8 to 1 spindle-nose speed reducer is available. On one relieving attachment all workpieces having a number of flutes or teeth not exceeding sixteen, use a single-lobe cam. Double-lobe cams are employed, however, where the number of cutting impulses per spindle revolution exceeds this. Spiral relieving can be accomplished by using special gears in an end gear train.

Spindle speed reducer available

The cam in the oscillating tool slide of this attachment is fitted with a large, graduated timer. This facilitates accurate setting of correct relationship between cam and work. Cams as regularly provided are designed to create a mathematically-uniform relief. However, special cams are obtainable for machining various other relief forms if desired. A special spindle speed reducer is provided for use in connection with this attachment.

On one line of lathes, relieving attachments are driven through a special gear box bolted to rear of lathe headstock. Different relieving-attachment combinations are available. An operator may use a plain relieving attachment of radial type, a side relieving attachment, or a combination of the two. Combination radial and spiral relieving is also possible.

Another line of small lathes has a relieving attachment which may be employed for right and left hand taps. It is also usable on milling cutters, counterbores and similar tools having up to 30 straight or spiral flutes. This attachment mounts on the carriage saddle in place of the lathe compound rest. The feed screw and telescopic shaft to the ram are powered through a special auxiliary drive.



RELIEVING milling cutter with relieving attachment on an engine lathe, at Caterpillar Tractor Co. plant.

One high speed threading attachment is considerably used in the oil fields. It reduces threading time by disengaging the half nuts automatically and thus stopping the threading tool. This can be done at high speed, and close to a shoulder. The attachment also automatically backs the tool out of contact with the work.

One bench lathe, having no leadscrew, is equipped for threading duty by a special attachment. A quadrant bracket fits on the end of the lathe headstock. This carries change gears by means of which various rotary speeds are derived from the headstock spindle. A second bracket, which contains two gears, clamps to the lefthand side of the slide rest. The two brackets are connected by a telescopic shaft. This shaft is fitted with two universal joints, and alignment is easy.

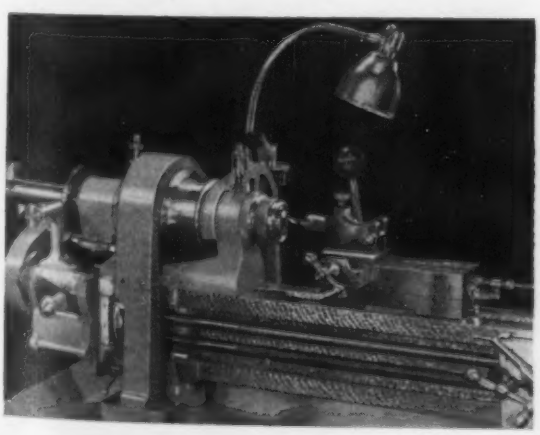
Change gears produce many threads

Change gears are provided to produce a large number of different threads. Internal threads may also be cut with this device through use of a special toolpost adapter.

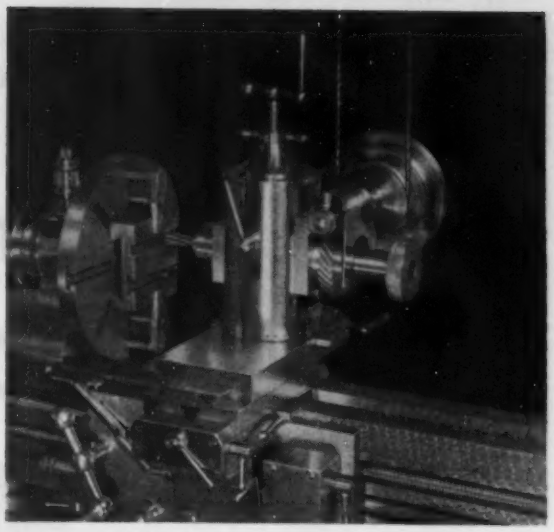
Some thread tools and attachments for lathes are for generation of particularly accurate and smooth threads. One screw-cutting lathe with a swing of 8½ in. can be fitted with a special threading tool having 10 teeth. This is used instead of single-point threading tools. The slide rest is removed, and a raising block is put on the lathe saddle atop which the threading tool is mounted. The cutter is pivoted on the tool, and has accurate means for indexing. Thus each of its ten teeth in turn may be applied to the work.

The first tooth is widely topped, and cuts only a very shallow groove. The second tooth cuts a bit deeper but no wider. Each succeeding tooth progressively deepens the groove. The tenth tooth takes a very light cut to precise form and smooth finish.

A lead-variating attachment is particularly indicated for finish-chasing accurate threads.



LATHE fitted with special slotting attachment, used to cut keyways, slots, and holes of any shape.



MILLING attachment on engine lathe set up for making first cut for a T-slot. Drive is by belt from overhead.

Before the finishing cut is made any lead errors are recorded on the spiral track of a special drum. An automatic follower shows the amount of correction necessary as the tool advances from one end of the work to the other. A large graduated handwheel is provided, with a pointer, for such correction. There is also an indicator dial which provides a visual check of the correction.

Metallizing guns used

Use of metallizing guns at the lathe for building up worn parts in connection with salvage operations is quite extensive. Some guns have been particularly designed for use in spraying cylindrical parts from a lathe-carriage mounting. In a few cases, users have rigged special lathe-carriage-traverse auxiliaries. These automatically reverse the direction of carriage travel, and move the carriage back and forth a distance in agreement with the length-portion of the workpiece to be built up.

One screw-cutting lathe can be fitted with a slotting attachment. It can cut slots and holes of regular form, and is also employed for cutting keyways, slots and holes of odd contour.

An interesting operation on an engine lathe is production of "twist turnings" of wood. A long-lead device was employed to traverse the carriage fast in relationship to spindle rotation. A special holder was arranged on the lathe carriage for a portable electrical wood working router, mounted with the axis of its cutter directly above the line of lathe centers. The material being machined in this case was wood. It is evident, however, that something very similar can be done with metal workpieces. A similar portable machine would be designed to turn at a much lower speed.

PARTS FLATTENED by annealing UNDER WEIGHTS

by Herbert Chase
Consultant
Forest Hills, N. Y.

Annealing under weights has replaced hand straightening on parts made from sheet or strip, cutting costs and aiding production. Fixture design and use are simple but important. Better results are obtained from subsequent operations such as case-hardening.

Many parts of the equipment made by International Business Machines are stamped or otherwise made from sheet or strip stock. They must be held within close limits as to flatness when ready for assembly. Stresses that may be in the stock initially or that are set up by fabrication may cause the piece to warp.

Where close flatness limits are specified at the Endicott, N. Y., plant, they often necessitated expensive hand straightening. Even this imposed stresses that might vary under certain conditions, resulting in subsequent waste or trouble. If flatness could be held within fairly close limits at the end of an annealing cycle calculated to remove all stresses, subsequent departures from flatness with resultant troubles and expense would be minimized. It remained to find a way of realizing the degree of flatness needed at the end of the annealing cycle.

Parts in question are mostly SAE 1010 or other mild steel, though some are alloy steel. Thickness ranges from 0.025 to 3/16 in. and parts vary widely in size and shape. Some measure less than 1 in. in maximum dimensions and some are as large as 12 x 14 in. or 1 x 16 in. Numerous parts between the smallest and largest are involved, Fig. 1.

Annealing under clamping pressure was tried

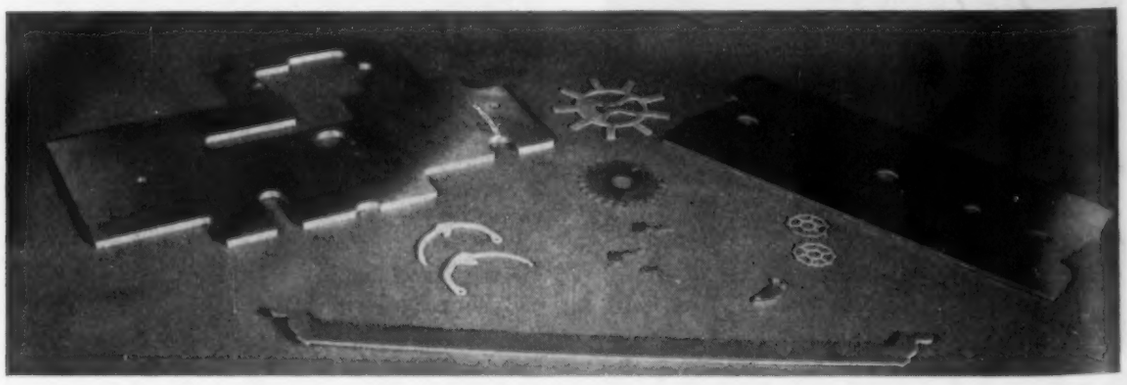


FIG. 1—Assorted parts flattened by annealing under weights. Tolerances as close as 0.003 in. are often held.

but did not give satisfactory results. However, if parts were laid or stacked between flat faces in fixtures of proper design under the moderate, floating yet constant pressure of a weight, good results could be attained. In fact, flatness often is held by this means within 0.003 in. In general, pressure applied is below 1 psi but generally is higher for an alloy steel part than for one of low carbon steel of the same thickness. It is essential that the fixtures remain flat and that the parts are placed with care and not stacked too deep.

Some tests may be required to obtain optimum results. If fixtures warp, as they may after repeated use, they must be trued by machining. Parts annealed in a warped fixture may have to be processed again. In the Endicott plant all fixtures are checked for flatness after each cycle.

Same weight, stacking for same parts

Fixtures are always loaded the same way in annealing successive batches of the same parts. The weight applied, the stacking pattern and height of stack are always the same for each group of identical parts. Occasionally, where very close flatness limits have to be held, ground plates much thicker than the parts themselves are placed between layers of the latter. In general, parts are stacked against each other in several layers.

Actually the fixtures are merely discs or plates of low carbon steel that have been ground flat. The lower plate, when circular, generally has a pin at the center and the upper plate has a central clearance hole for the pin to keep the two halves concentric. Square or oblong plates often are held one above the other by wire with parts stacked between. This facilitates handling but the wire is not tightened enough to apply any significant pressure. Locating pins often are used to help keep stacks even.

In stacking, parts are placed so that no portion of any one part overhangs the same portion of adjacent parts. This insures uniform pressure. Parts that are not symmetrical are arranged so that they support the upper half of the fixture parallel to the lower half. Any cocking would result in uneven pressure.

Parts shown with fixtures in Fig. 2 indicate how stacking is done. At the right are two circular fixtures loaded with a spoked stamping called a D.C. armature, blanked and pierced from SAE 1010 steel 0.062-in. thick. Each stack is 15 pieces high. The left one of the two shows the parts before annealing and that at right, a similar stack after annealing. In this case, two 4-lb weights are applied and parts come out flat within 0.008 in., which meets requirements.

Parts at center of Fig. 2 are 17-in. long pawl ratchet bails and are blanked from SAE 1010 steel 0.090-in. thick. Those in foreground have not yet been annealed. To the rear, these parts are shown stacked five high in two piles in the 10-lb fixture designed for them. After annealing, these bails are flat within 0.006 in. or less.

At the left in Fig. 2 is a single stack of clutch discs blanked from SAE 4615 steel 0.031-in. thick. In this case, the pieces, shown after annealing, are in a single stack of 50 pieces but they are held against shifting by the central pin. A single 2-lb weight is applied and parts come out of the annealing within 0.006 in. or less of flatness.

Grinding also needed sometimes

Most stampings are deburred by tumbling before annealing, partly because burrs might keep the parts from bearing evenly against each other or fixture surfaces. Tumble burring, even though done with care in slow moving barrels, may result in some parts being bent somewhat. However, annealing as described usually restores the degree of flatness specified at this stage of processing.

In many cases, however, flatness limits are too close to be held as a result of the annealing alone. It is then necessary to grind the piece, and grinding may be specified for other reasons. Material removed in grinding usually is

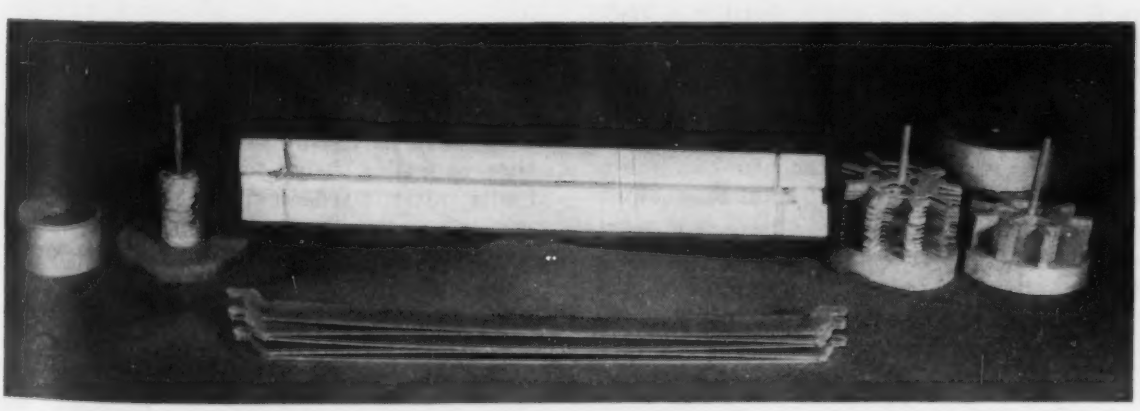


FIG. 2—Fixtures used in flattening parts made from sheet and strip. Parts at right shown before and after annealing.

FIG. 3—Parts in fixtures being loaded on furnace belt.

FIG. 4—Previously flattened stampings loaded on special racks shown as they are being placed in salt bath.

Parts flattened (continued)

less than if an attempt at flattening by annealing had not been tried first. Moreover, as the piece is in the fully annealed state, there are no stresses that grinding might relieve, causing warpage. Warpage can still occur, however, if the piece has been straightened without an anneal or has been stressed by some other processing.

In other words, although the annealing has proved most helpful and has saved much hand straightening, it is not expected to provide the degree of flatness needed in all cases. It does mitigate certain troubles to the extent indicated.

Continuous belt-type furnace used

Annealing is done in a continuous belt-type furnace, electrically heated, through which the loaded fixtures are advanced on a wire mesh belt 20 in. wide, Fig. 3. Heat is supplied by "Globar" units that are easily renewed, and is under thermostatic control. Heating is done in an exothermic atmosphere to avoid oxidation of parts, and raises the parts to a temperature of 1650° to 1700°F. Total distance that fixtures travel on the belt, including loading and unloading areas, is 53 ft. Heating is done within an 8-ft travel, beyond which there is a 29-ft cooling zone. Temperature is reduced slowly to 300°F before fixtures issue from the furnace.

Heating capacity of the furnace is 700 lb per hr but it is not used to this capacity because the fixtures with their load require too long a heat-through period to absorb total heat output while in the heating zone. The furnace is operated, however, 24 hr a day. Cycle time is 5 hr. Savings attained by the annealing process have been large and are expected to amortise the investment in about six months.

Operation of the entire annealing setup is by three men on first shift and one man for both second and third shifts. These men do all loading and unloading of the fixtures besides watching the furnace, keeping it loaded and removing fixtures as they issue from the furnace. These operators also check parts and fixtures for flatness.

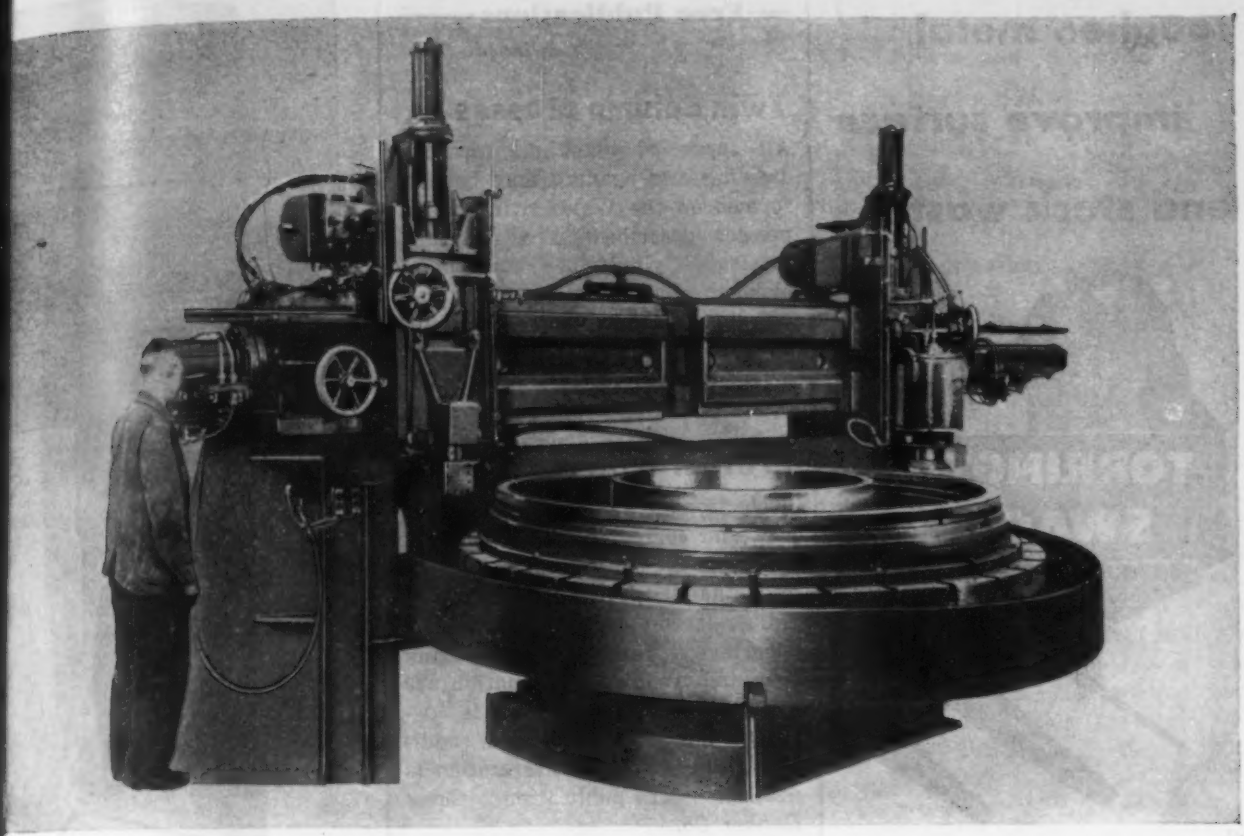
Special hardening racks employed

Many of the parts that are annealed have to be case-hardened subsequently and this hardening commonly is done in activated salt baths, Fig. 4. In most cases, parts can be warped or otherwise altered dimensionally unless hardening is done with much care. For this reason, the parts are so racked that they enter the salt bath and are quenched in such positions that dimensional changes are minimized. Some of the parts, such as those in Fig. 4, are of a general crescent shape, yet the distance from center to center of holes near the two ends has to be held within ±0.002 in.

Parts that have been annealed are less likely to warp in hardening than if previously straightened by conventional means. Because, as the parts are stress free after annealing, there are no unequal stresses left to be relieved in the salt bath.

Hardening may cause change anyway

It does not follow that hardening may not cause some dimensional change and perhaps some adverse change in flatness. It is simply that annealing helps to hold closer flatness limits after hardening. Flatness deviations occurring after hardening can be removed by grinding, which is commonly specified anyway. Formerly, some hand straightening was needed after hardening and efforts to avoid this are highly desirable. Aside from the considerable labor cost, the case may be fractured in the straightening operation.



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Twin column presses

All types of blanking, forming, drawing and bending may be performed on the Wales twin column presses described in a new 8-p. catalog. Cylindrical ram guides make the press similar to a standard die set and in some cases eliminates the need for a die set. *Wales-Strippit Corp.*

For free copy insert No. 14 on postcard, p. 139.

Protect with rubber

Protection against abrasion, impact and corrosion through use of rubber is the subject of an unusual 44-p. handbook describing Gates rubber-faced steel plate and rubber covering. Valuable engineering data and technical information are included. The handbook is designed for expansion with additional fillers as new information is available for publication. *Gates Rubber Co.*

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Materials handling

A new 8-p. booklet shows important construction and operating features of the new Baker type FS 2000 lb fork truck. Photographs are used to strip down the truck by major components for a closer look at the truck's functional design features. *Baker-Raulang Co.*

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Press motors

A new technical bulletin on Type F punch press motors contains a wide range of technical data and application information on high-slip, high-torque motors for punching, forming and shearing machines. *Howell Electric Motors Co.*

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Hand trucks

A new 12-p. condensed truck catalog gives specifications and illustrations for Howe hand trucks and other materials handling equipment. Modern construction features engineered for long, trouble-free service contribute ruggedness and dependability. *Howe Scale Co.*

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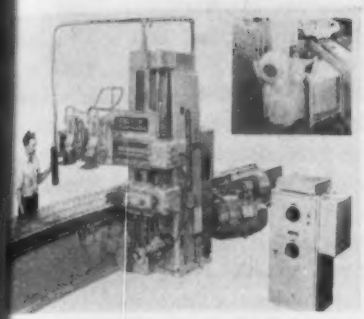

High production planer handles small work

A new hydro planer incorporates ten outstanding production, construction and operating features. Bonded nonmetallic ways prevent scoring; combination air-hydraulic tool feeds give fast, accurate feed; balanced, smooth table travel is assured by anti-friction drive. The motor is mounted directly to the bed, averting any possible chance for misalignment. The Chipmaster's table cut and return speeds can be set to accommodate any type cutting tool for any type of cut. Quick selection of levers for feed and traverse aids operator efficiency. *Giddings & Lewis Machine Tool Co.*

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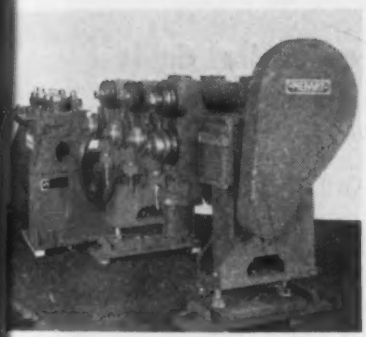

Shape straightener has overhung rolls

The advantages of quick and easy setup inherent in the overhung roll type of shape straightener, and the exceptional control of bending stresses possible in a straightener with variable centers have been combined in a new two-plane shape straightening machine. Variable center rolls permit versatility in the adjustment of bending spans necessary in the handling of an unlimited range of shapes and sizes. Bottom rolls can be moved directly under the top rolls to permit cross-rolling or reforming of the cross sections of distorted extrusions, or other shapes, simultaneously with straightening action. *Medart Co.*

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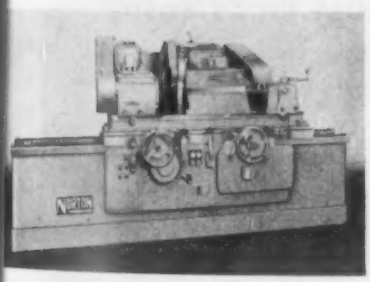

Cylindrical grinder performs light type work

Light type work requiring up to 18 in. swing is rapidly ground to finest limits of accuracy and finish in this new grinding machine, which is made in six work lengths from 18 in. to 120 in., and is available as a plain machine or as a semi-automatic. Work is produced rapidly with a minimum of effort because of such features as pre-set truing and grinding speed, click-count wheel feed indexing, automatic work rotation. *Norton Co.*

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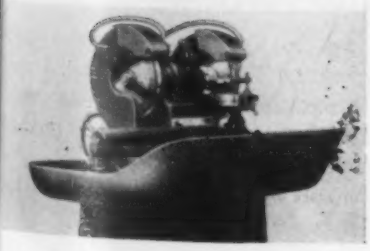

Swiss machine grinds and laps carbide tools

The new machine is identified as the Safag No. 27 hard metal tool grinding and lapping machine. It is universally applicable for all hard metal tools for any kind of Swiss or Swiss type screw machine. Diameter of grinding wheel measures 5.9 in. Maximum shank size of tool to be ground is 0.8x1 in. *Carl Hirschmann Co.*

For more data insert No. 22 on postcard, p. 139

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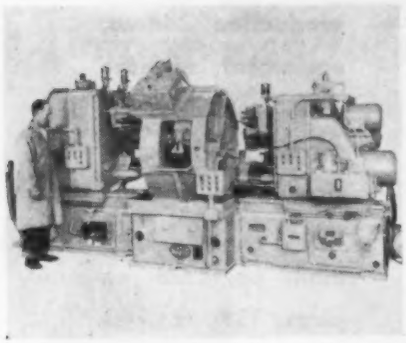

Production is 85 transmission cases per hour

A combination, four-way, horizontal and angular machine drills 10 holes, chamfers four holes, combination reams and spot faces one hole, reams one hole, combination reams and spot faces two bosses and taps 8 holes in 85 transmission cases per hr. The machine comprises horizontal floor type units arranged with fixed center gear driven heads, and provided with auxiliary reversing drive tapping units. Heads contain a total of 17 drilling spindles and 8 tapping spindles. One single spindle, tapping unit is angularly mounted and one angularly mounted Holeunit having a single spindle drill head completes the machine. *National Automatic Tool Co.*

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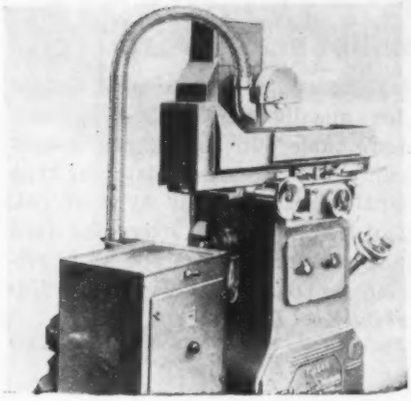

Hydraulic surface grinder has 6x18-in. capacity

Jones & Shipman of England is offering a precision surface grinder with centralized controls, and simplicity of design combined with accuracy and efficiency. Vertical adjustment of the wheelhead is 0.0001 in. divisions and the fine adjustment for the vertical wheel-feed is 0.0001 in. The wheelhead spindle runs in plain journal and thrust bearings, is hardened, ground and tapered at the front end to receive grinding wheel flange plates. Bearings are diamond bored and spindles are ground and superfinished to within 2 micro-inches, rms. Wheelhead slide operates on preloaded ball-bearing rollers running on precision ground bar guides, for rigidity of wheel head location in all positions of its vertical traverse, and sensitive control of the wheel feed. Table traverse is arranged for hydraulic and hand operation. *British Industries Corp.*

For more data insert No. 24 on postcard, p. 139

Fast, light drilling possible on radial drills

Thirty and 70-in. radial arm drills have been reinstated to the Ekstrom, Carlson line of production equipment for the aircraft industry. Units are adaptable for both single piece and production runs with equal efficiency. Four types of each of the two sizes are available: Type A is mounted for use at a fixed height only; Type B has vertical adjustment of 6 in.; Type C has its own cast iron base. All have an inner spindle assembly that slides within an outer sleeve. Type D has no outer sleeve and its spindle assembly is actuated manually. *Ekstrom, Carlson Co.*

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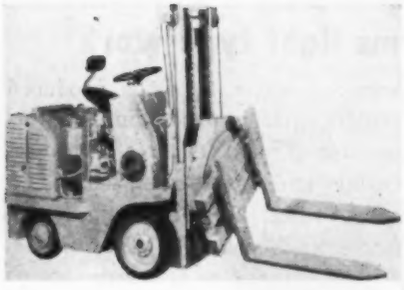

Rollover clamp handles pallet loads easily

Designed for installation on 4000-lb capacity Baker fork trucks, the rollover-clamp makes it easy to handle pallet loads of material on the forks, dump skid boxes with the rotating head and use the forks as clamps for handling miscellaneous objects. Another use is dumping skid boxes of steel scrap into a baling machine, after which the clamp is used to pick up the finished bales and load them into gondola cars. Loads up to 2400 lb can be handled. *Baker-Raulang Co.*

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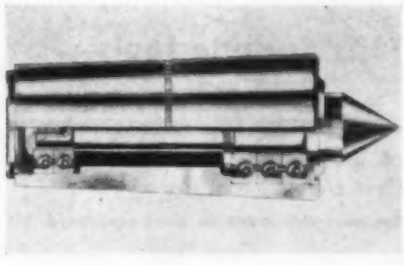


Anti-friction centers minimize overhang

New Red-E anti-friction centers of a built-in type eliminate overhang and permit full clearance as well as maximum distance between centers. They are assembled with precision angular contact, anti-friction ball bearings, pre-loaded and locked-in. Bearings are mounted for maximum radial and thrust load capacity. Labyrinth seal retains and preserves the lubricant. *Ready Tool Co.*

For more data insert No. 27 on postcard, p. 139

Turn Page

Wiggins Gasholder does 7 years' work in 11 months!

Pilot gasholder stores coke oven gas for nationally known steel maker. *Dry seal proves thoroughly effective!*

March 13, 1950, a pilot plant test was begun to determine suitability of the Wiggins neoprene dry seal in storing debenzolized coke oven gas. Automatic controls were installed which filled and emptied the gasholder every hour. This was the operation over the first several months. During the remaining period, this cycle was alternately speeded up and slowed down. On February 13, 1951, this Wiggins Gasholder test was completed —after 11 months and 2,650 cycles— roughly equivalent to 7 full years of operation at one cycle per day!

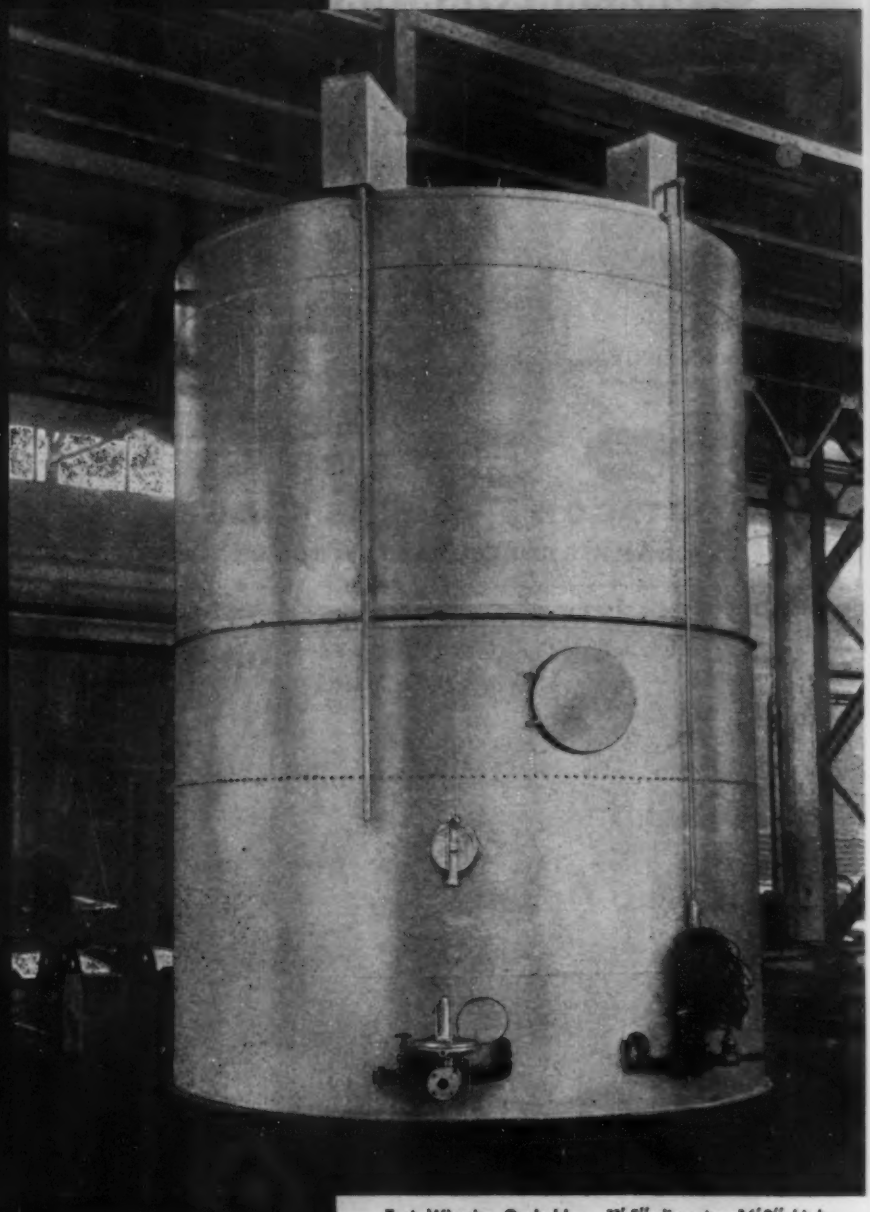
During the entire test period coke oven gas was in continuous *direct contact* with the seal fabric. Temperatures in the gas space ranged from over 100° F. to below 0° F. During much of the test, inside surface of seal was wet with condensate. All these conditions combined to give as severe a test as anything that could be expected.

THESE WERE THE RESULTS:

Air side of *dry seal* in original condition.

Neoprene coating on gas side flexible and resilient—unaffected by chemical action. No hardening or cracking.

All seams gas-tight. NO HARMFUL EFFECTS TO DRY SEAL.



Test Wiggins Gasholder—11' 5" diameter; 16'0" high. Maximum movement of piston—10' 10 11/16".

Wiggins is the ONLY gasholder using an *absolutely dry, frictionless seal.* No water, tar or grease. No weather worries, operating costs or maintenance problems. No replacement of sealant. Write for new BULLETIN WG-22 . . . or refer to Builders' Committee Report (May, 1951) American Gas Association.

WIGGINS VAPOR SEALS
GENERAL AMERICAN
TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION

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For Your
Metal-Finishing Needs...
OCTAGON
Phosphating Compounds
...Select from
OCTAGON'S complete line...

ANCHORITE 100
- A corrosion resistant phosphating base for paint.
- Meets Army Spec. No. 57-0-2C, Type II, Class C.

RUSTSHIELD 2
- Used for friction surfaces of moving parts; oil-retentive, prevents galling and freezing.
- Meets Army Spec. No. 57-0-2C, Type II, Class A.

PROTECTORITE
- Rustproofing.
- Meets Army Spec. No. 57-0-2C, Type II, Class B.

ANCHORITE 200
- A cleaning phosphating compound.
- Where only light oil and dirt present, no degreasing necessary.

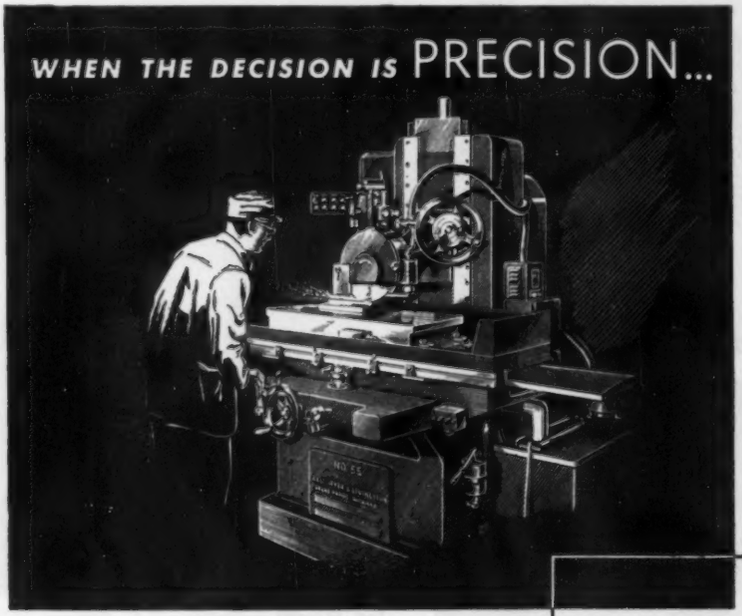
RUSTCLEAN 12 AND 15
- For removal of rust, scale, flux and preparation for paint.

Write for New Booklet on Rustshield 2

OCTAGON OCTAGON

OCTAGON PROCESS INCORPORATED
18 BANK STREET, STATEN ISLAND 1, N. Y. (Cable Address: OCTAPRO)

WHEN THE DECISION IS PRECISION...



Where extreme tolerances are not required, the choice of any particular grinding machine may not be too important. But, where absolute precision is demanded, the choice is usually *Grand Rapids*.

Defense orders make it impossible to fill orders as quickly as we desire—but we know our customers can appreciate the reasons for delay As always we'll do our best to serve you.

GALLMEYER & LIVINGSTON CO.
200 Straight Ave., Grand Rapids, Mich.

Grand Rapids Grinders
—World's finest

GALLMEYER & LIVINGSTON

—New Equipment—

Continued

Cutting compound

A new cutting compound for mil ing and machining stainless ste other alloy metals is said to preve galling and pitting of metal sur face, increase tool life, permi higher cutting speeds and assur greater accuracy through mainte nance of uniform cutting tempera tures. It has the same high tem perature and pressure resistin qualities as Fel-Pro's thread com pound, which is said to withstan temperatures up to 1800°F. *Fel Products Mfg. Co.*

For more data insert No. 28 on postcard, p. 1

Pickling additive

Aerobrite, a new addition agent will be marketed to the steel in dustry as an aid in cold drawing, porcelain enameling and tin plat ing. In preparing steel for cold drawing, the addition of a minute quantity of Aerobrite to the pick ling bath results in brighter steel and the removal of surface iron salts harmful to expensive dies. In nickel plating steel sheets before porcelain enameling, the product can be used as a relatively non-toxic and cheaper replacement for sodium cyanide to remove iron salts from the nickel's surface. In tin plating, Aerobrite prolongs the life of the baths by eliminating sludg ing. *American Cyanamid Co.*

For more data insert No. 29 on postcard, p. 1

Friction saw blades

On a new saw band designed for friction sawing, teeth are perma nently anchored and locked in place. The metallurgical characteristics of the band enable maximum flexation, resulting in long uninterrupted pro duction sawing. A prerequisite for friction sawing is long flex life rather than tooth sharpness as in conventional low-speed sawing; friction saw bands are not recom mended for low-speed conventional type sawing. The friction saw is offered ¼, ¾, and 1 in. wide, 10 or 14 teeth per in. *DoAll Co.*

For more data insert No. 30 on postcard, p. 1

Turn Page

WASHINGTON STEEL CORPORATION

MicroRold Stainless Steel

WASHINGTON, PENNSYLVANIA

PHONE: WASHINGTON 5900

JOHN C. RICHARDS
GENERAL MANAGER OF SALES

YOU CAN STILL PRODUCE STAINLESS STEEL PRODUCTS

TYPE 430 IS STAINLESS STEEL

Type 430 (straight-chrome) enables many fabricators to continue production of stainless products, by consideration of its fabricating qualities and physical and chemical properties.

HAVE YOU EXPLORED THE POSSIBILITIES OF MICROROLD TYPE 430 SHEETS?

MicroRold Type 430 offers the same fabricating advantages, such as micro-accurate thinness control, uniformity of gauge, increased product yield, longer die wear and excellent surface conditions, as characterized by the MicroRold trade name.

Our warehouse distributors are available to assist you in solving application and supply problems. Write for the name of the MicroRold distributors in your area.

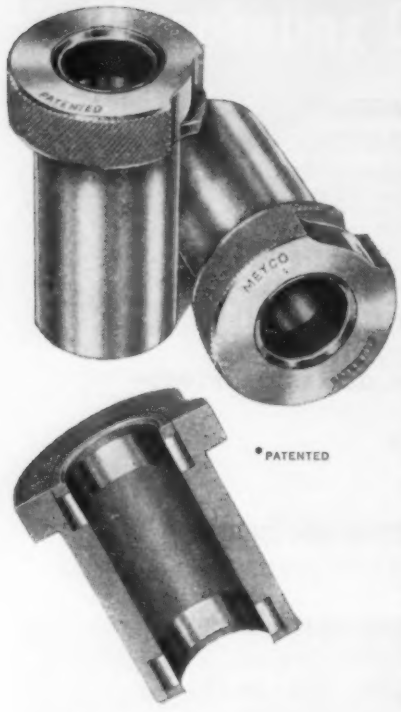
Yours truly,

WASHINGTON STEEL CORPORATION

John C. Richards,
General Manager of Sales

MEYCO

CARBIDE INSERTED DRILL JIG BUSHINGS



*PATENTED

☆ Combining the best features of steel and carbide—here is the answer to increased production and to tough drilling problems: MEYCO Carbide Inserted Drill Jig Bushings.

MEYCO bushings last as long as solid carbide bushings in most cases and cost a great deal less—they will increase the life of drill jigs, fixtures, drills and reamers—they will maintain accuracy for a much longer period of time—they will increase production, save you money in machine-down time, lost man-hours and less spoilage.

MEYCO bushings are made to A.S.A. Standards in Headless Press Fit, Head Press Fit and Fixed Renewable Types. MEYCO Bushings can also be adapted to many special applications—write for fully informative catalog No. 31 today.

Manufacturers of precision tools since 1888

W. F. MEYERS CO., INC.
BEDFORD, INDIANA

—New Equipment—

Continued

Rust proofing

An economical method of preventing rust and corrosion of metal parts, in the presence of air and moisture, is provided by VPI crystals. Being slightly volatile at atmospheric temperatures, VPI gives off vapors that are carried by convection and diffusion to all surfaces of the metal, where they condense to provide a thin protective layer. It is a powder-like substance that can be applied by placing it in a package containing parts to be protected; by blowing it into an area to be protected; by putting it into a water or alcohol solution and covering the metal parts in tote boxes. It will arrest corrosion at any advanced stage. *Shell Oil Co.*

For more data insert No. 31 on postcard, p. 139

Quiet solenoids

The 3K-300 saddle stop type solenoid introduces a leather faced retainer stop and hood, so arranged as to act as guide and a silencer to the plunger movement. Compact, simplified design makes it easy to change coils to accommodate different voltages and frequencies. This series retains Stellite-Weld bonding of laminations of the plunger at the sides and point of impact. Variety of strokes: ¼, 5/16, ⅜, 1½ in. *National Acme Co.*

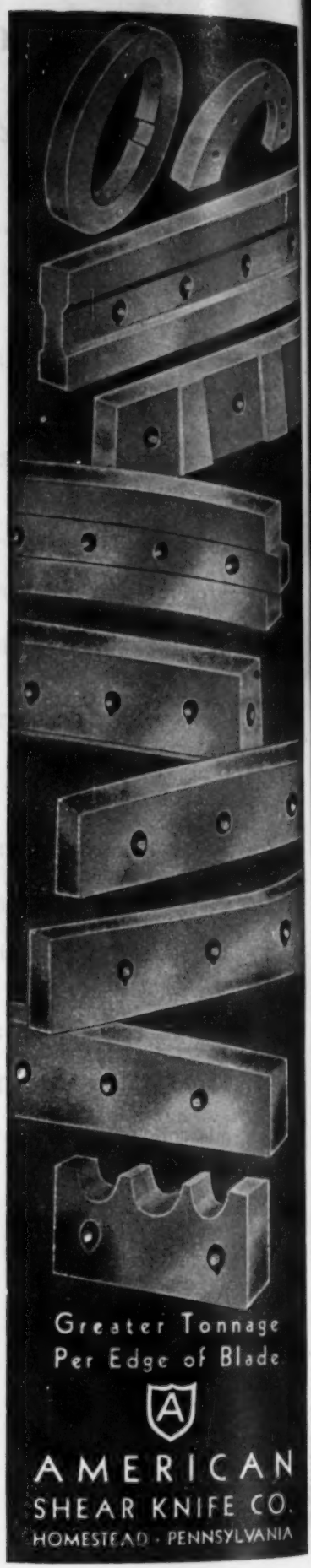
For more data insert No. 32 on postcard, p. 139

Universal clamp

An attachment that fits Spacemaster gasoline and electric fork trucks is designed to lift, transport, stack, and unpile a variety of materials. The device mechanizes storing, loading, and unloading operations with ease and speed. It can handle boxes, cases, or unit loads up to 1700 lb, 48 in. long on pallets, bins or skid platforms when lifting arms are used as conventional forks. A hydraulic side clamping feature provides easy handling of rolls, bales of various materials, single or more at a time, compressed or flat, in any position, up to 1400 lb. *Lewis-Shepard Products, Inc.*

For more data insert No. 33 on postcard, p. 139

Turn Page



They aren't worried about steel...
BUT A LOT OF PEOPLE ARE

Honestly, we don't like it any better than you do. We're in the steel business to fill the orders of our regular customers and go out looking for more. And we just can't do it in these times.

You know the steel situation as well as we do. Our mills are producing every ton of steel to capacity—and we still can't make it go all the way round to all the people who want it.

But we can and will continue to produce steel as fine as strict metallurgical control can make it. And we can and will continue to be completely honest about our ability to deliver. When we promise shipment, you can rely on that commitment, in the specifications and with the quality you always expect from us.

WISCONSIN STEEL COMPANY, affiliate of INTERNATIONAL HARVESTER COMPANY
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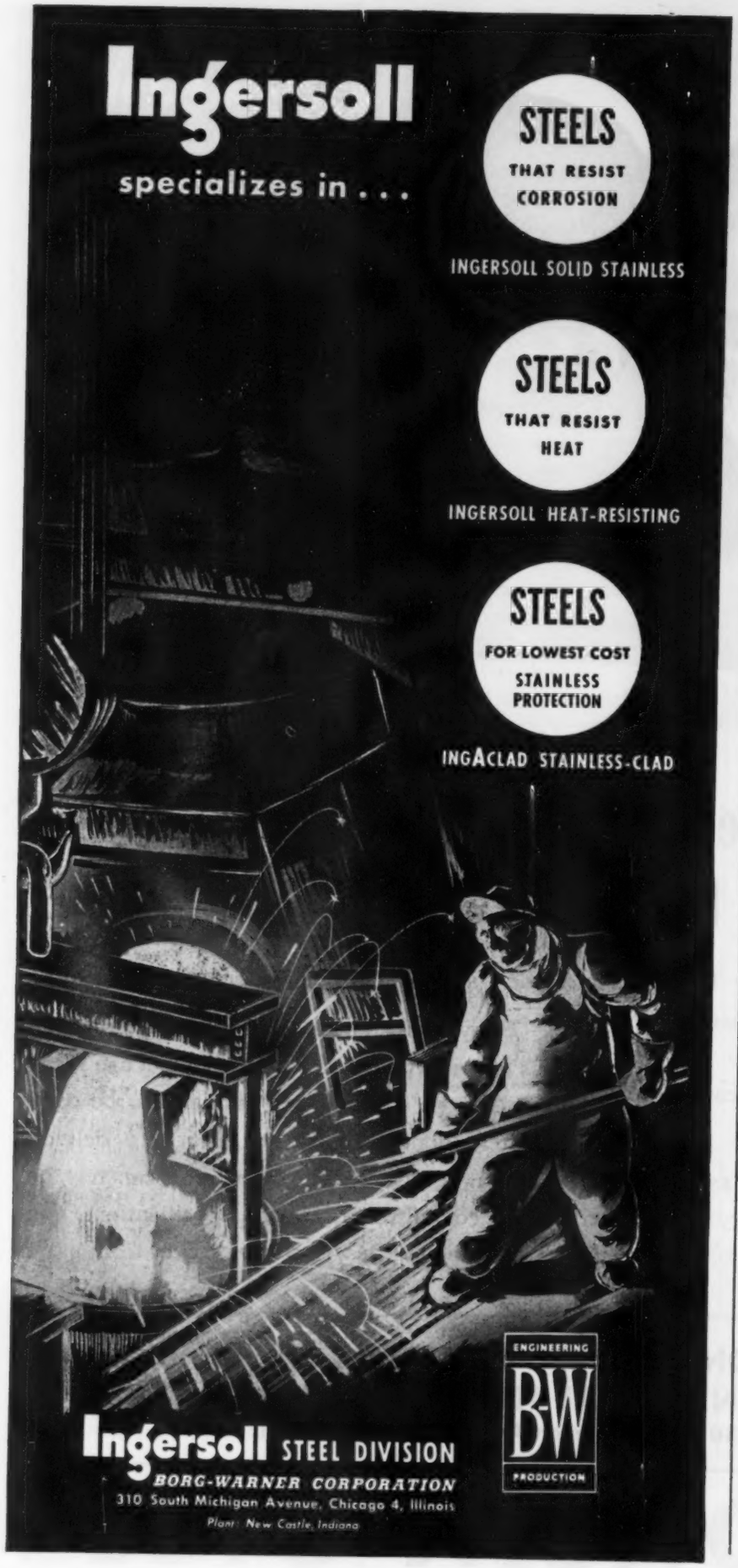
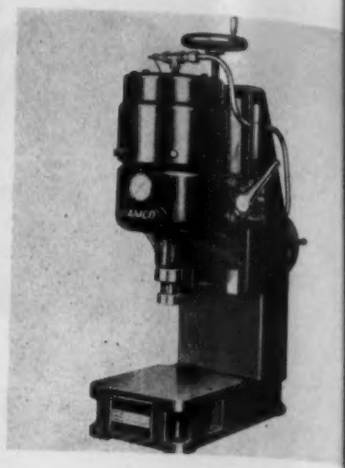
INTERNATIONAL HARVESTER

WISCONSIN STEEL



—New Equipment—

Continued



New design features

Heading the design features of a new air press built for production use is the frictionless cylinder of diaphragm design requiring no lubrication of any kind. All models have a built-in pressure gage, infinitely adjustable stroke coupler with extra-long maximum stroke, ram keyed to prevent rotating, large working surface, and infinitely vertical adjustment with no bolts to loosen or remove. The manufacturer reports that only the finest materials are used in this line of presses which is the culmination of the joint engineering of Famco and Bendix-Westinghouse. Twenty models are available, having ½ to 3½ ton capacity. *Famco Machine Co.*

For more data insert No. 34 on postcard, p. 139

Damage protection

Dual Channel Protectron, a development in electronic damage prevention methods, makes possible the simultaneous protection of two machines when one is feeding to the other in joint first and secondary operation. The Protectron senses the slightest mechanical overload in either machine, and instantly trips both machines and conveyor before there is damage. The instrument requires only a turn of the dials to adjust for a new set of machine load conditions. *Brinnell Co.*

For more data insert No. 35 on postcard, p. 139

—New Equipment—

Continued

Spade drills

Standard spade drills drill a required diameter in one operation, from the solid, and need no retracting to clear them of chips. Eight sizes of tool holders hold 256 stock sizes of high speed spade drills in sizes ½ to 5 in. diam, in steps of 1/64 in. All holders also accommodate core drills, both high speed steel and tungsten carbide tipped, available in the same 256 stock sizes. *Conner Tool & Cutter Co.*

For more data insert No. 36 on postcard, p. 139

Fast starting

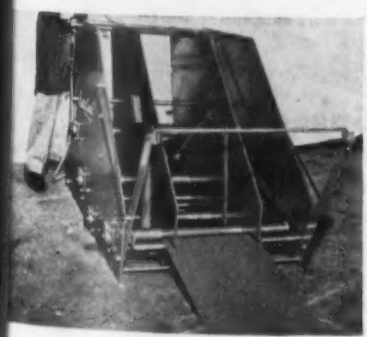
Kar-Start makes possible fast, positive starting of car, truck or bus engines, regardless of weather conditions. When connected to the automotive ignition system, pressing the starter causes the Kar-Start to send five times the normal amount of spark from the spark plugs, starting wet or cold engines immediately. *Schauer Mfg. Corp.*

For more data insert No. 37 on postcard, p. 139

Coil cradles

Easy Load motor driven, automatic coil stock cradles with 3000 lb capacity take stock with a maximum OD of 48 in. and maximum width of 15 in. A newly designed actuating arm operates on the inside or outside of the slack loop. Hardened and ground rolls are mounted in each of the two individually controlled guide plates. The reversing switch is standard equipment. The top bar of the actuating arm swings completely out of the way for loading. *Rowe Machinery & Mfg. Co., Inc.*

For more data insert No. 38 on postcard, p. 139



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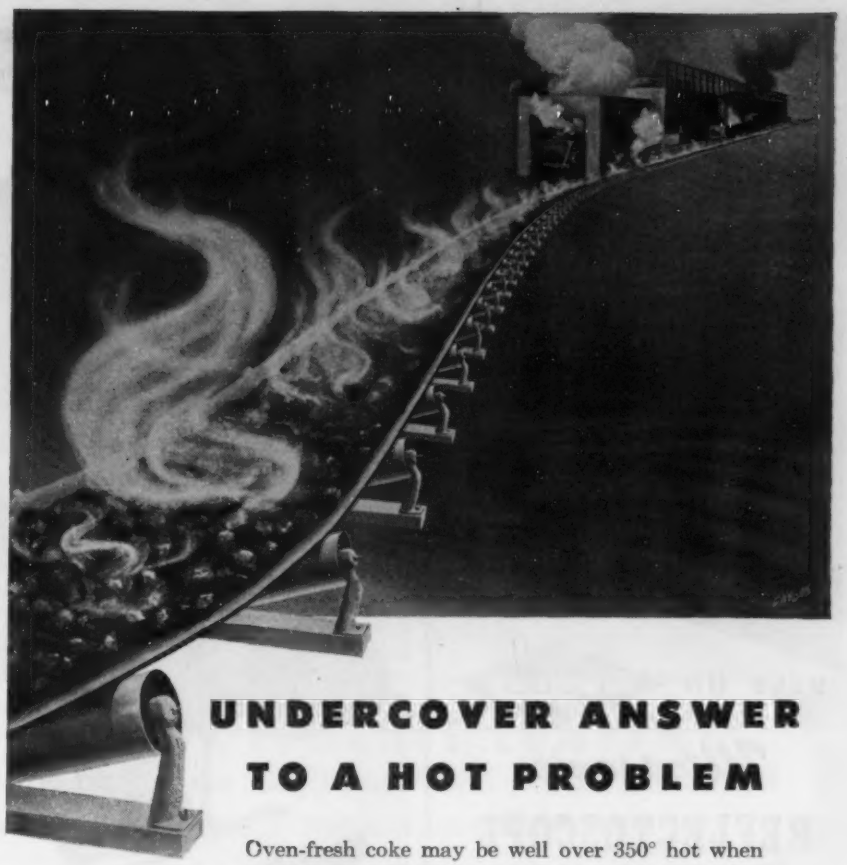

UNDERCOVER ANSWER TO A HOT PROBLEM

Oven-fresh coke may be well over 350° hot when hauled away from the quenching area by a rubber covered conveyor belt. That is why ordinary belts lead such a short, scorched life when used for handling coke, or sand, or lime, or sinter (roasted ore) as well as other materials that are hot.

To solve such problems, Hewitt-Robins developed belting built up inside with plies of Fiberglas*, cotton, asbestos and synthetic fabrics—and covered outside with especially developed and compounded rubber and synthetics. The fabrics contribute to high dimensional stability and tensile strength; the covers resist heat and abrasion. Both combine to give Hewitt-Robins Hot Materials Conveyor Belting much longer service life.

Hot Materials Conveyor Belting is one of many Hewitt-Robins "firsts" in materials handling belting, machinery and techniques. It is a product of an organization unique in its field. Only Hewitt-Robins can deliver—from within its own corporate structure—all three elements of a belt conveyor system: engineering, machinery *and belt*. Only Hewitt-Robins can assure individual responsibility for their successful operation—because only Hewitt-Robins makes them all.

When the handling of materials—hot or cold—is your problem, we invite you to make it ours. Our three industrial divisions are ready, individually or collectively, to meet your needs.

*T. M. of Owens-Corning Fiberglas Corp.

HEWITT HR ROBINS

Executive Offices: 370 Lexington Avenue, New York 17, N. Y.

HEWITT RUBBER DIVISION: Belting, hose and other industrial rubber products

ROBINS CONVEYORS DIVISION: Conveying, screening, sizing, processing and dewatering machinery

ROBINS ENGINEERS DIVISION: Designing and engineering of materials handling systems

Hewitt-Robins is participating in the management and financing of Kentucky Synthetic Rubber Corporation

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Ultrasonic

REFLECTOSCOPE

TEST NEW MATERIAL at the mill to improve quality and customer acceptance. TEST METALS PRIOR TO PROCESSING, MACHINING AND FABRICATING to avoid wasted machine time and man-hours resulting from faulty materials. QUALITY CONTROL of work in process. MAINTENANCE INSPECTION to detect fatigue fractures. MEASURE PHYSICAL DIMENSIONS. Rely on the ultrasonic Reflectoscope to provide accurate inspection—instantaneously at low cost. Reflectoscopes are available for sale, for rent or lease.

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DANBURY, CONNECTICUT

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☐ NAME OF NEAREST REPRESENTATIVE

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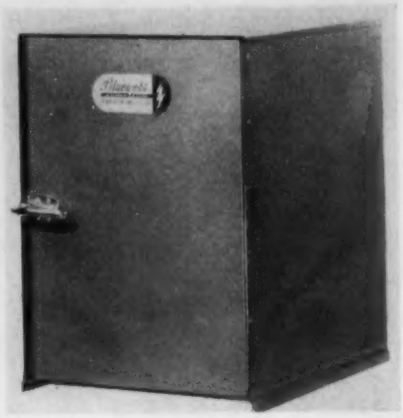
SPERRY ALSO MANUFACTURES COUPLINGS, HYDRAULIC CONTROLS AND OTHER TESTING EQUIPMENT

New Equipment

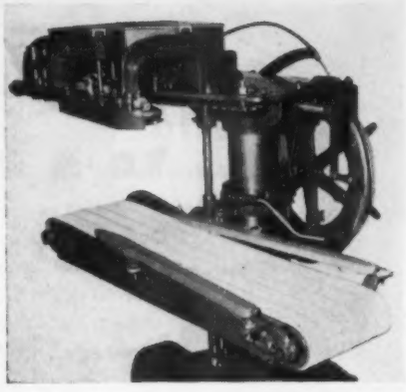
Continued



Electrode stabilizer

Protecting low hydrogen weldi electrodes from atmospheric moi ture from the time they are re moved from the moisture-proof co tainer until they are put into use possible with a compact, efficien moisture content stabilizer know as the Blueweld Lo-Hydrogen elec trode stabilizer. It keeps low hy drogen electrodes truly low hydro gen. The unit stores 400 lb o electrodes. *Fred C. Archer, Inc.*

For more data insert No. 39 on postcard, p. 13



Bag closing machine

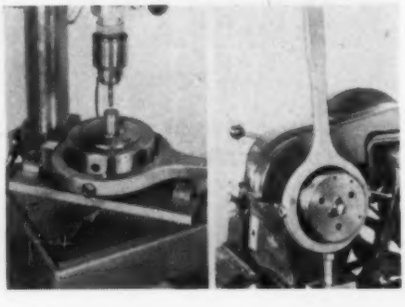
A completely automatic bag closing machine capable of closing up t 2000 paper bags per hour has bee designed. The unit offers low-cost mass production packaging of bag weighing from 2 to 100 lb when filled. A unique arrangement o chain drives compresses the neck o the bag, then seals it with metal wire. *Hamer Machine Co.*

For more data insert No. 40 on postcard, p. 13

Thread comparator

Thorough visual inspection of ex ternally threaded parts up to 1½ in. diam is provided by the Dual thread comparator. The same com ponent parts as the Standard com parator are used but in addition to a single jaw, a second jaw with a two-thread engagement provides a specific check of pitch diameter, and a check of back taper on very short threads whose length does not exceed the major diameter of thread. *Hanson-Whitney Co.*

For more data insert No. 41 on postcard, p. 13



Speed chuck

The standard Hampton speed chuck has a wide capacity range, handles all shapes of stock with the same jaws and permits individual jaw adjustment for zeroing run-out, or compensating for wear as it oc curs. The three jaws close univer sally. *Wallace Pawley Enterprises.*

For more data insert No. 42 on postcard, p. 13

OF THREADS
NATIONAL FORGE & ORDNANCE COMPANY
Irvine, Warren Co., Penna.
STEEL MAKERS • FORGESMITHS • HEAT TREATERS • MACHINISTS • MACHINERY AND TESTING EQUIPMENT MFRS.

IS THIS THE SHAPE YOU WANT?

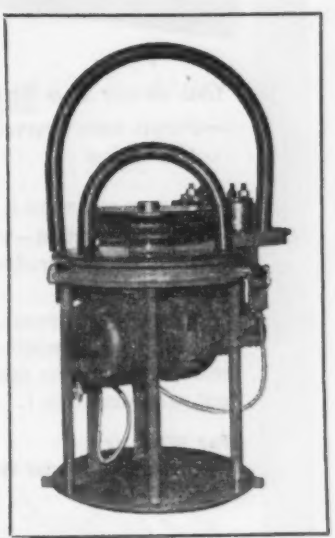
It's Yours With a Pedrick Production Bender

Rely on Pedrick Production Benders to solve your pipe, tube, strip shapes and bar stock bending problems.

Pedrick Benders perform accurately—uniformly—speedily—economically.

Equipped with relay controls for semi-automatic duplicate bending, Pedrick Benders will bend pipe up to 6" extra heavy—has no clamps—thereby eliminating many expensive tools.

Pedrick machines require no previous experience, special skills, expert supervision. They are inexpensive—keep your costs low.



If speed, accuracy, quantity, with quality, is your aim, write for descriptive folder.

PEDRICK TOOL & MACHINE COMPANY

3638 N. LAWRENCE ST., DEPT. 2 **PHILADELPHIA 40, PA.**

PAGE WIRE

ROUND
FLAT
OR
SHAPED

LOW CARBON
HIGH CARBON
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SPECIAL ALLOY
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You draw the Shape
—Page can draw the Wire

—the way you want it for your production—whether it's ALL of your product, or only a part.
Cross-sectional areas up to .250" square; widths to 3/8"; width-to-thickness ratio not exceeding 6 to 1.

for Wire or Information about Wire—

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ACCO

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

—Technical Briefs—

Titanium Carbide:

New metal resists shock, oxidation at high temperatures . . .

A heat-resistant titanium alloy that resists thermal shock and oxidation while retaining strength at temperatures of 1800°F and above has been developed by Kennametal, Inc.

Known as Kentanium, the essential ingredient is titanium carbide. The metal was developed to meet the growing need for materials capable of showing strength and shock resistance under high temperature operating conditions.

Structural alloys — those that can be melted and precision cast, or cast and forged, or otherwise hot-worked to shape—are limited in their ability to withstand heavy loads at elevated temperatures. Ceramics retain strength at high temperatures and are resistant to oxidation, but for many applications are too brittle and deficient in thermal shock resistance.

The metal cannot be melted and cast, but is made fabricated by methods of powder metallurgy. A material of uniform structure, free from the effects of segregations and grain size variation, is produced.

When tested, specimens held at 1800°F for 210 hours showed an adherent oxidation of only 0.0009 in. Microphotos show no observable change in the physical structure.

Turbine blades have been run at gas inlet temperatures of 2200°F for 110 hours with good results. Some compositions of the metal have withstood short-time exposure to temperatures as high as 4500°F.

Insulate With Glass Cloth

Silicone rubber-treated glass cloth for motor and cable insulation is now being produced at General Electric's Coshocton, Ohio, plant.

In the dipping process, the glass cloth is passed through a liquid solution of silicone rubber. After application of heat to cure the rubber, the fabric is ready for use. The process is continuous.

"Rudolph Says He Knows The Taps Would Last Longer If He Had The Right Cutting Fluid On The Machine"

USE OF the *right* cutting fluid for the job *makes taps last longer,* conserves critical tool steel, minimizes downtime, increases output. A typical example:

A large instrument manufacturer changed to Stuart's THREDKUT for tapping Allegheny metal...

	Before Using ThredKut	After Using ThredKut
Tap Life	2 hours	8 hours
Production	180 holes per hour	400 holes per hour

You just cannot ignore the fact that the cutting fluid used is a major factor in any machining operation. A Stuart Representative is prepared to show you how Stuart combines theory and practice to give you better operating performance. Ask to have him call.

Are you receiving Stuart's Shop Notebook regularly? Write, wire or phone

CONSERVE TOOLS
Use the Right Cutting Fluid

STUART SERVICE
Goes with every Barrel

D.A. Stuart Oil CO.

2737 S. Troy St., Chicago 23, Illinois

—Technical Briefs—

Heating Coils:

Tantalum heat exchangers, coils more durable, corrosion resistant.

Tantalum heating coils offering several advantages over coils made of other materials have been developed by United Chromium, Inc. Heat exchangers utilizing tantalum tubing are available in standard units or made to order.

Tantalum heating coils and heat exchangers promise durability. Virtually acid-proof, tantalum resists all acids commonly found in the plating room, except straight hydrofluoric acid. It is recommended for chromium plating solutions usually so severe on lead coil or special alloy heat exchangers.

Freedom from the sealing that forms heat-insulating coatings, and a maintenance problem, is possible. Tubing stays clean and shiny. While excellent for acid solutions, tantalum should not be used in alkaline baths where ordinary iron or steel serves quite well.

Savings in both heating and cooling are possible. Tantalum possesses better heat conductivity than steel and is superior to any lead alloy.

The great strength of tantalum permits use of tubing with thin walls, with no allowance necessary for loss of strength due to corrosion. Good conductivity plus thin walls provide fast heat transfer with minimum lag and closer regulation of bath temperatures.

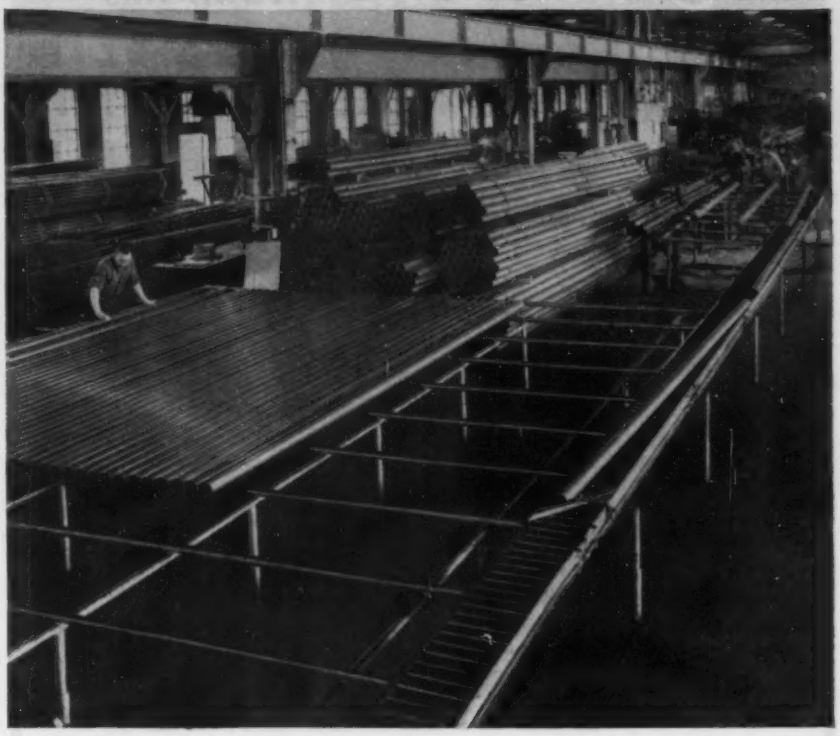
Unloader Speeds Press Work

A junior size "Iron Hand" press unloader, operating at speeds in excess of 42 strokes per minute, has been developed by Sahlin Engineering Co.

The unloader, heretofore operated at maximum speed of 32 spm, will be used by a leading motor manufacturer to unload lamination "doughnuts."

Previous production of seven pieces per min will be increased six-fold through an automatic press set-up including coil feed and unloader.

AVAILABLE FOR FAST DELIVERY

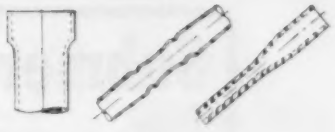


Brainard ELECTRIC WELDED TUBING

EXPANDED production at Brainard's new tube mill now permits fast deliveries on certain sizes of electric welded mechanical steel tubing. Brainard tubing is supplied straight or fabricated, sizes ½" to 4" O.D.; .025 to .180 gage.

Brainard tubing is a uniform product produced to close tolerances. It has good machining qualities, and finish can be supplied as specified: for chrome plating, painting, etc.

Integrated production facilities permit quality control throughout the manufacturing process—from ore to finished tubing. You can depend on Brainard service for *your* needs. District offices in principal cities throughout the U. S.



EASY TO FABRICATE

Brainard electric-welded tubing can be beaded, expanded, swaged, spun, flanged, upset, grooved, fluted, flattened, tapered, and otherwise formed to meet a wide variety of design requirements.

Brainard also pre-fabricates to your requirements; bending, end expansion or taper, internal or external beading, slotting, fastening, etc. Call on Brainard's tubing specialists to save yourself fabrication time and costs.

WRITE FOR FULL INFORMATION

Brainard
SHARONSTEEL
STEEL COMPANY
WARREN, OHIO

Brainard Steel Company
Griswold Street, Warren, Ohio

☐ Send catalog listing complete specifications of Brainard Tubing.

☐ Advise availability of following sizes:_____

Your Name_____

Company_____

Address_____

City_____ State_____

Over one thousand in daily service.

Control Dust ...with this

RUEMELIN TUBULAR TYPE FILTER

A Ruemelin Tubular Type Cloth Filter is the modern way to handle industrial dusts created in foundry cleaning rooms, metal working plants, cement mills and many other applications. The simplicity of Ruemelin Dust Filter design means low operating and maintenance costs. Definite power savings are assured by lower resistance to air flow.

NEW DUST FILTER BULLETIN AVAILABLE

Write for our new Bulletin No. 24-D just released. Learn for yourself the advantages you secure with a Ruemelin Bag Filter and at no extra cost.

RUEMELIN MFG. CO.

MANUFACTURERS AND ENGINEERS
SAND BLAST AND DUST COLLECTING EQUIPMENT
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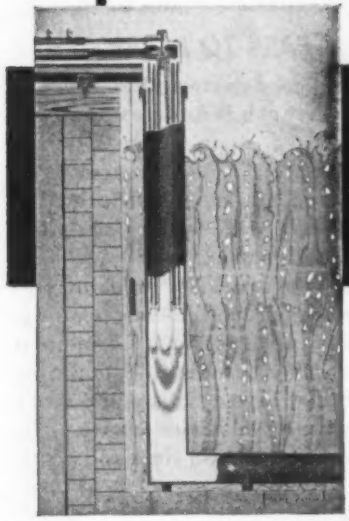
A 5881-½R

Submerged Combustion

DIRECT FIRED GAS BURNERS

FOR FASTER, CLEANER LOWER COST

PICKLING



Exposed view of Submerged Combustion Burner installed directly into pickling vat. Automatically gas fired. Thermostatically controlled to keep acid at correct pickling temperature.

★ Flame burns below surface of acid—heats and agitates acid for faster, cleaner pickling.

★ Does not dilute acids—Highly corrosion resistant—Low operating and maintenance cost.

★ Install in present tanks, or add new vats without adding to boiler load. Burns any type gas —natural or manufactured.

Free Send for descriptive booklet #41 and details

SUBCOMCO

SUBMERGED COMBUSTION CO.

OF AMERICA, INC.
759 LOGAN STREET HAMMOND, IND.

—Technical Briefs—

Atomic Power:

New materials needed to withstand intense heat and radiation . . .

Development of materials capable of withstanding high temperatures and intense radiation is a problem of "unusual and critical degree" in an atomic power plant for aircraft, according to Dr. M. C. Leverett.

Dr. Leverett heads a group responsible for developing an aircraft nuclear power plant for the Atomic Energy Commission and the U. S. Air Force.

Organic compounds are particularly susceptible to deterioration from radiation, and even outside the zone of most intense radiation in the reactor, ordinary lubricants turn tarry or even solidify, he said.

Some liquids or gases which might be used as coolants are decomposed by radiation, Dr. Leverett noted, and electrical insulation, upon prolonged exposure, breaks down and disintegrates or loses its effectivness.

Pointing out that one pound of fissionable material such as uranium 235 contains heat equivalent to 1,700,000 lb of gasoline, the nuclear engineer pictured a plane in which fuel consumption would be measured in pounds per day.

The energy of fission from a nuclear reactor is manifested as heat which must be converted into thrust or mechanical work, Dr. Leverett said.

Develop New Drill Bit Line

Forged steel rock bits are being distributed to the mining, quarry, construction and other heavy industries by a new subsidiary of Mackintosh-Hemphill Co.

Distribution of "DBT Throwaway" rock bits through contractor and mine supply houses is the responsibility of Drill Bit and Tool Co.

The bit is a one-pass bit that can be thrown away when worn out instead of being resharpened.

Ceramic Coatings:

Add extra life to high-temperature alloys in aircraft exhausts

Ceramic coatings recently developed by the National Bureau of Standards are substantially increasing the service life of high-temperature alloys, particularly in the exhaust systems of aircraft.

Most successful and widely used of these coatings is NBS ceramic coating A-417, which has been in commercial production since early 1950.

The new protective material, developed by William N. Harrison, Dwight G. Moore and associates of the NBS staff, under the sponsorship of the National Advisory Committee for Aeronautics. The coating is applied by spraying or dipping and is then fired for a few minutes at 1850°F.

Ceramic coatings are applied to heat-resistant alloys for protection against scaling and intergranular corrosion. Uncoated alloys suffer mostly from the chemical action of hot corrosive gases —particularly oxygen, lead bromide, sulfur compounds, and hydrocarbons.

The erosive effect of the gases impinging on the alloys at high velocity seems also to be a factor in certain types of service.

The enameled metals laboratory at NBS has been working on ceramic coatings for metals since 1942, and the newer A-417 is not the first NBS coating to have been used extensively.

NBS ceramic coating A-19 was developed particularly for use on low-carbon steels. A-19 has been used regularly in military aircraft production since 1944 and has been adopted with slight modifications for a variety of non-military applications.

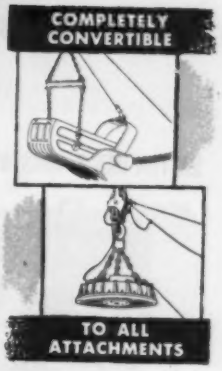
Die Life:

Induction hardening lengthens life of press brake dies, study finds.

Induction-hardened dies show 10 to 20 times the useful life of conventional heat-treated dies used in press brakes, according to

Built by modern precision methods, the UNIT 1520 leads the field in quality, and dependable performance. Designed for both "on and off" highway operation. So compact, it works efficiently even in small, cramped quarters, "in or out" of the yard.

- Rugged Construction
- Perfectly Balanced
- Hook Roller Construction
- Operated by ONE Man
- Powered by ONE Engine
- Hydraulic Steering
- Air Brakes and 4 Speed Air-Actuated Transmission
- Heavy Duty, yet operated with remarkable SPEED . . . SAFETY . . . ECONOMY!



UNIT 1520 can be equipped with retractable high A-Frame to permit capacity loads on extended boom at long radius.

UNIT CRANE & SHOVEL CORPORATION
6517 W. BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

A-1025

EASTON ...a dependable design and construction service in industrial cars

EASTON CAR & CONSTRUCTION COMPANY · EASTON, PA. · NEW YORK · PHILADELPHIA · PITTSBURGH

Four Single-Cylinder WISCONSIN *Air-Cooled* ENGINES Offering More POWER ADVANTAGE, 6 to 9 hp.

This series of single-cylinder models have all of the traditional Wisconsin heavy-duty features such as self-cleaning tapered roller bearings at both ends of the crankshaft, rotary-type, high tension OUTSIDE magneto operating as an independent unit, and maximum torque at all usable speeds.

CONDENSED SPECIFICATIONS

MODELS		AEH	AFH	AGH	AHH
Bore	inches	3	3¼	3½	3⅝
Stroke	inches	3¼	4	4	4
Disp. cubic inches		23	33.2	38.5	41.3
H. P. and R.P.M. range		3.9 at 1600	6.0 at 1600	7.2 at 1600	7.7 at 1600
		6.1 at 2600	7.2 at 2200	8.4 at 2200	9.2 at 2200
Net weight in lbs., Standard Engine		130	180	180	180

Our engineering department will gladly cooperate with you in adapting Wisconsin Engines to your requirements. Write for detailed data and name of the nearest Wisconsin distributor.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46 WISCONSIN

a 5-year study made by Dreis & Krump Mfg. Co.

Superior performance of induction-hardened dies is due to accurate control of both the degree and depth of hardness over the entire length of the die, the study found.

A special machine was developed to handle induction-hardening of press brake dies. It consists of a traveling unit to handle both male and female bending and forming dies of any length.

Automatic controls govern the speed of the die through the high-frequency, induction-heating unit and the quenching station for obtaining a predetermined depth and degree of hardness that is uniform the entire length of the die.

The process adds little to the cost of conventional, heat-treated dies and, because of longer useful life, does show an appreciable saving in over-all die costs, it is claimed.

Manual Welding:

New unit gives precision, speeds operation . . . Quality welds.

Speed, quality and low cost features of mechanized welding are possible with the Heliarc semi-automatic welding unit for use on manual welding operations.

Arc length, speed of travel and rod feed are controlled automatically. All the operator does is steer the torch along the line of weld. Low-cost, high-speed X-Ray quality welds result. Close manual control of the welding operation is possible.

Welders require little training skill to operate the unit. Current and rod-feed rate are pre-set. A trigger starts the arc. Welds require little or no finishing.

Carbon steel, stainless, and high-temperature alloy steel sheet can be welded with the unit. Excellent welds may also be produced in cobalt and nickel base alloys.

Welds may be made in flat, horizontal, vertical and overhead positions on butt, lap, edge and corner joints. Welds may be made in materials from 0.020 in. to ⅛ in.

Power:

U. S. Steel's big new generator could serve city of 150,000 . . .

The largest single-shaft turbo-generator ever built for industrial power production is now in operation at United States Steel Company's South Works at South Chicago, Ill.

Housed in a new 10-story addition to the No. 5 power station, the generator is one of the principal installations in the multi-million dollar improvement program at this plant.

Steam for the generator is provided by a new boiler with a capacity of 650,000 lb an hour. It operates at 900 lb, 900°F, at the superheater outlet and is equipped with water-cooled walls. The boiler is the largest ever installed to utilize blast furnace gas, an excess of which, at this plant, formerly bled to the atmosphere.

The new 60-cycle, 3-phase turbo-generator has a power factor of 0.85 and generates 60,000 kw at 13,800 v. It has a direct-connected exciter and a hydrogen cooling system. When operating at capacity, the generator will produce enough electric power to service a community of 150,000.

New Drill Boosts Coal Output

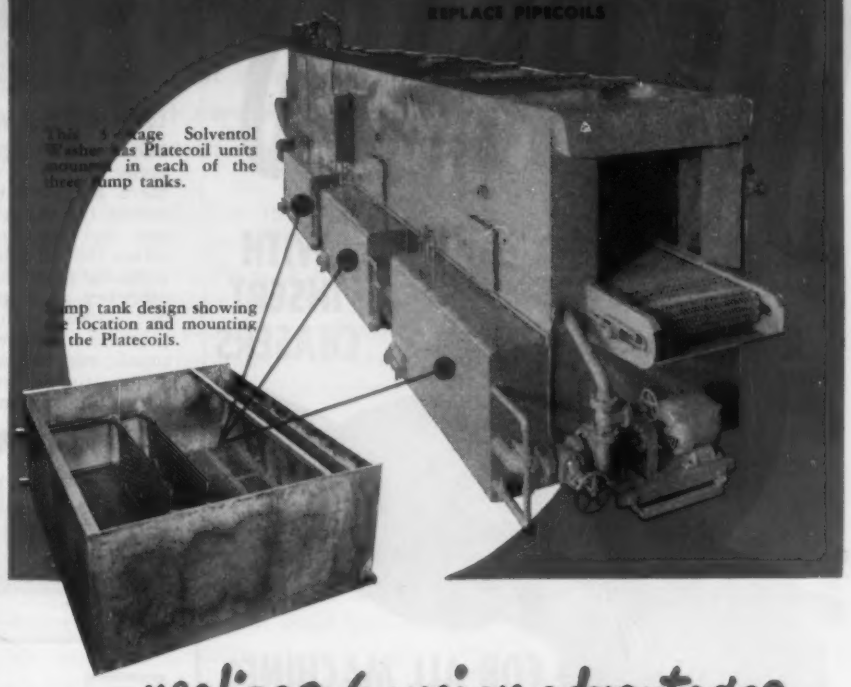
A new coal-mining machine, in effect a giant drill over 4 ft in diam and 200 ft long, bores a horizontal hole along flat-lying coal seams and drills coal out in a fast, continuous flow.

Six of these mammoth augers are operated in parallel by a West Virginia coal company. As coal comes out, automatic conveyors load it into trucks. A 4-man crew can turn out 700 tons of coal per hour.

The largest power shovel in the world, standing 12 stories high and weighing more than a Navy destroyer, has been put to work by a bituminous coal company. It scoops up a chunk of earth as large as a one-car garage and can dump it 240 ft away.

now! SOLVENTOL CHEMICAL IS SAVING MONEY with PLATECOILS

REPLACE PIPECOILS



This 3-stage Solventol Washer has Platecoil units mounted in each of the three sump tanks.

Sump tank design showing the location and mounting of the Platecoils.

... realizes 6 major advantages

Solventol Chemical Products, Inc., Detroit, Michigan has joined the growing list of manufactures who are saving money by using Platecoils in their products. Use of Platecoils as the heating medium in their 3-stage washer has resulted in 6 major advantages:

1. *Simplified installation.*
2. *Sharply reduced installation costs.*
3. *A higher rate of heat transfer.*
4. *Low first cost.*
5. *Solution flow controlled without baffles.*
6. *Increased sales advantages due to easier maintenance.*

The Platecoils are installed in each of the three sump tanks as shown in the inset picture. The pre-fabricated Platecoil units are installed in but a fraction of the time required for bending and installing pipe coils. That's why most manufacturers find it costs less to buy and install Platecoils than to fabricate pipe coils in their own plant.

In addition, the Platecoils are about 50% more efficient than pipe coils. As a smaller size Platecoil can be used, considerable savings in steel and more compact machine designs are possible.

If you're looking for ways to conserve steel and save money, get the facts on Platecoil today. Write for bulletin P73.

H&G DIE HEADS

WITH INSERT CHASERS

FOR ALL MACHINES USED FOR CUTTING SCREW THREADS

The famous H & G Die Heads come in styles and sizes for all types of machines, including threading machines, chucking machines, drill presses, turret lathes, and automatic screw machines, such as Brown & Sharpe, Cleveland, Cone, Davenport, Economy, Foote-Burt, Greenlee, Gridley, Acme-Gridley, New Britain, New Britain-Gridley, Swiss, etc.

The small, inexpensive high-speed steel insert chasers are held by rugged carriers and cut threads straight and true to the close tolerances required.

The majority of expert production men prefer these die heads because of the ease with which insert chasers are resharpened and set, the low cost of insert chasers and the greater quantity of threads per grind and number of pieces threaded per chaser dollar.

The reduction in inventory will pay for new die heads. **For example:** If you have $1,000 in chaser inventory, changing to H&G will require only $300, setting free $700 for the purchase of new H&G heads. This is due not only to low cost of chasers, but to interchangeability and long life.

Check and Mail for—☐ "Selecting Proper Die Head for the Job" Free Copy—☐ Style MM ☐ Style DMS ☐ Style DM ☐ Style TM

THE EASTERN MACHINE SCREW CORPORATION

21-41 BARCLAY STREET NEW HAVEN, CONN.

Mfrs. General Purpose Die Heads, Insert Chaser Die Heads, Threading Machines.

Both Nut and Bolt are LOCKED TIGHT

Low cost—fast assembly

Because PALNUT Lock Nuts apply on top of ordinary nuts, there are no interfering parts within the nut or between the nut and load to prevent or retard the full application of bolt stress for maximum bolt loading efficiency. A properly tightened nut, locked with a PALNUT, provides a completely vibration-proof, rugged assembly which stays trouble-free during the entire life of your products.

Powerful spring tension (A-A) is exerted upward on the bolt threads and downward on the ordinary nut, while slotted jaws (B-B) close in and grip the bolt like a chuck.

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Trademark
LOCK NUTS

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ELECTRIC FURNACE

C STEEL CASTINGS

Offset Increasing Production Costs.

These clean, true-to-pattern steel castings give you Uniform Structure—Efficient Distribution of Metal—A Wide Range of Mechanical Properties to fit your specific needs—Minimum of Machining—Ease of Assembly—Dimensional Stability for better fit and better performance—and a Toughness and Fatigue Resistance that provide for longer life, less replacements.

We specialize in this type of steel castings. Efficient controls throughout our plant assure consistent uniformity, thorough dependability and a product that will prove to be economical for use in your equipment whether it be ships, turbines, railroad equipment or what-not.

CRUCIBLE STEEL CASTING CO.

LANSDOWNE, PENNA.

Signs of Easing Steel Market Might Be Misleading

Estimating production isn't so tough . . . But who can tell what demand is . . . Controls have upset normal relations . . . Lifting them could change all . . . Output reaches high.

This week attention in the steel market is focused on signs which point to an easing of supply. But these signs should be read with the greatest caution and all market factors should be considered judiciously — lest the signs be misinterpreted.

What are these signs? (1) Consumers don't want high-priced steel. (2) The high pressure conversion market is losing steam. (3) Products, such as sheet and strip, which used to be in tightest supply are becoming easier. (4) Structural inquiries have been decreasing steadily for months. (5) Conviction that requests for steel under the Controlled Materials Plan are inflated has destroyed confidence in government figures on demand. (6) The terrific rate of steel expansion and production promises a much larger supply next year—and more the next year, if it is needed.

Tough Questions — If these signs were all present in a free market they would be most convincing. But the present market isn't free. That's the rub. You have to be careful in interpreting free market signs in a controlled market. How do you measure demand when consumers aren't permitted to use as much steel as they would like? What would happen to demand for cold-rolled sheets or to the conversion market if control officials would suddenly lift all restrictions?

These are the imponderables that are causing market swamis to rub their crystal balls thin. Nobody really knows when steel supply will catch up with free market demand. But information at hand does eliminate some guessing. In the face of present industry commitments no overall easing of steel demand seems possible before the middle of next year. It does seem possible toward the end of the year.

Who Decides? — Steel sales people don't like to talk about what the market will be like more than 6 months ahead. For one thing, they know only too well that the future of the steel market may be greatly altered by events in Washington, or Korea, or Moscow. They would like to see controls lifted. This, they feel, would result in a more realistic appraisal of demand in a hurry.

How does the steel user feel? Right now government red tape, confusion and double talk require a lot of his attention. But he still finds time to complain if his CMP tickets haven't been honored. And he is chafing over restriction on the amount of metal he is allowed to use. The steel consumers who fought tough procurement battles in a free-for-all postwar market, and did pretty well, believes in finders keepers. He'd like to keep whatever he can find.

But you can't tell him the steel market is easing. He'll believe it when a steel salesman visits him offering delivery of scarce items next month.

Quality Good? — Despite the sustained high production rate, steel quality is holding up remarkably well. There are some exceptions, because quality is bound to suffer during a long period of peak output. But even steel people are surprised as how well it is holding up. They give a lot of credit to maintenance departments.

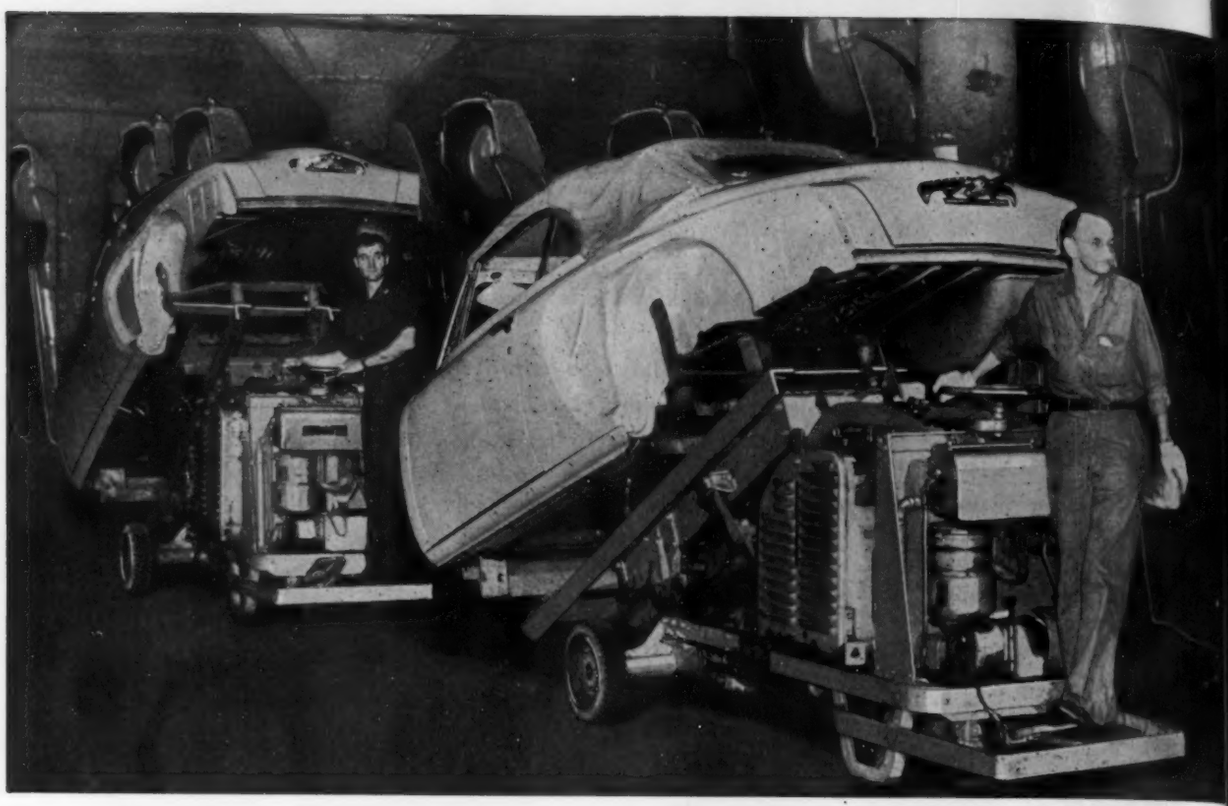
During peak production quality usually suffers most from lack of time for proper maintenance, pressure on production personnel and poor scrap. Production of more copper-based and alloy steel also affects carbon steel quality. Alloy residuals of chrome, nickel and molybdenum are up slightly at the present time.

Scrap Worry—Some sheet gages are not as exact as they should be. This is due to the fact that there is no time to reroll off-gage lots. Sales people have found that it pays to inform customers of this. They are given a chance to decline the order. This reduces complaints to a minimum.

As cold weather nears, the importance of scrap grows. And so do the fears of steel producers. Their stocks on hand are far smaller than normal. To maintain the present rate of consumption, scrap storage yards should be bulging. The scrap drive in industry is bringing out a lot of good metal but not nearly enough.

Ingot Rate Jumps—Steelmakers would like to see the government put more heat on its own dormant scrap sources, such as Army, Navy and mothball merchant fleet. It is believed that at least half a million tons of good quality scrap could be obtained from obsolete ships.

Steelmaking operations this week are scheduled at 104 pct of rated capacity, up 1.5 points from the previous week. This equals the highest scheduled rate of production this year.



SYNCHRONIZATION to the Split Second!

Elwell-Parker Trucks prove their Dependability meeting exacting assembly line schedules

Auto bodies, completely assembled and finely finished, are fed to Studebaker's assembly line in great numbers and with incredible speed by Elwell-Parkers . . . Truck failures on such a critical operation would prove disastrous. But with reliable Elwell-Parkers, the line keeps rolling 'round the clock.

Fourteen years ago, Studebaker installed their first Elwell-Parker specially designed for this job. Now they use 12 on this operation alone! What better proof can you ask for of E-P dependability?

In addition, E-P trucks have repaid their cost many times by saving storage space. The trucks upend and store bodies vertically—3 times as many on the same floor space as compared to horizontal storage. As a result, a huge investment in new storage space has been avoided . . . Complete story on this installation furnished on request.

Whether you require continuous or only intermittent truck operations with an assurance of no down time, you can benefit from the remarkable dependability of Elwell-Parkers. Call in your near-by man for a materials handling system "tailored" to your needs. The Elwell-Parker Electric Company, 4075 St. Clair Ave., Cleveland 3, Ohio.

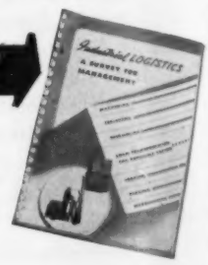
ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

FREE BULLETIN

on Scientific Materials Handling. Write for "Industrial Logistics" and name your product.



Market Briefs

use limited—All production of aircraft-quality alloy steels has been earmarked for aircraft, guided missile, or atomic energy programs, beginning Jan. 1. Steel plants will be required to take warehouse orders for such alloys up to a minimum of 100 pct of tonnages shipped during base period of Apr. 1, 1951, to June 30, 1951.

more expansion—Youngstown Sheet and Tube Co. will spend an additional $40 million for expansion at Indiana Harbor. New facilities will include a 56-in. cold strip mill, expandable to 66-in., and a fourth heating furnace to the existing 56-in. hot strip mill. Company hopes to have facilities ready by late 1953. Cold mill will add 600,000 tons rolling capacity, increasing strip and tin plate capacity at Indiana Harbor to 960,000 tons.

new company—Fort Duquesne Steel Co., Pittsburgh, and The Hamilton Steel Co., Cleveland, effective Nov. 1 began operating as divisions of the newly-formed Federated Steel Corp., Pittsburgh. Donald C. Lott is president and treasurer of Federated, and continues as president and treasurer of Fort Duquesne Div. Earnest W. Harwell is a vice-president of Federated and continues as president of Hamilton Steel Div.

new yard—New scrap yard of Columbia Iron & Metal Co. at Girard, Ohio, was officially opened Tuesday. New facility covers 28 acres, is said to be the largest single expansion in the scrap industry. National Production Administrator Manly Fleischmann officiated at opening ceremonies.

steel rise—French steel prices, which were raised an average of 18 pct last April, are to go up another 22 pct in accordance with a decision of an inter-Ministerial committee. The new rise is designed to compensate the 15 pct wage increase just granted by the iron and steel industry and the 20 pct advance in French coal prices.

bad friends—Ambassador Luis Fernando Guachalla of Bolivia says U. S. is running the risk of losing Bolivia's friendship as a result of failure to approve an "equitable" price for tin. He says RFC has refused to offer a price higher than $1.12 per lb, although Bolivia accepted that figure provisionally in September with the understanding that a new "definite" price would be agreed upon.

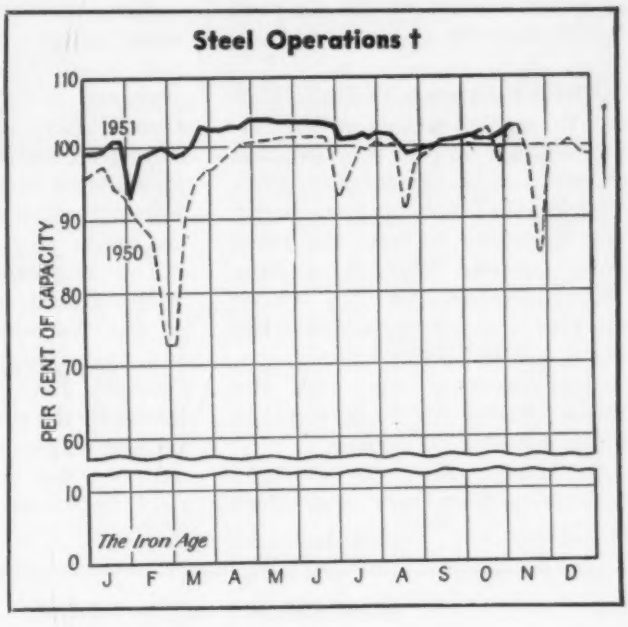
new capacity—First heat of steel was tapped Tuesday from one of Jones and Laughlin Steel Corp.'s 11 new Pittsburgh openhearth furnaces. Each furnace has a capacity of 250 tons of steel per heat.

conversion—Steel importers have applied the conversion deal to international trade, though it differs somewhat from regular domestic conversion. In order to get foreign steel, importers are helping arrange coal exports. This sometimes includes financing. But, expensive as it is, this barter has resulted in boosting steel imports to this country.

gray market—Engineering Industries Assn. representing a large number of small British engineering companies has charged there is a "gray market" in Britain in steel and other materials. The Ministry of Supply acknowledges that it is at present investigating the situation.

revenue freight—Car loadings for the week ending Oct. 20 totaled 886,648, according to Assn. of American Railroads. This was an increase of 17,965 cars or 2.1 pct over the preceding week, but a decrease of 4582 or 0.5 pct from the corresponding week in 1950.

rate rise—Shipment by Railway Express Agency will cost an average of 11 pct more with a flat minimum rate of $1.50 when a rate increase approved by Interstate Commerce Commission goes into effect shortly.



District Operating Rates—Per Cent of Capacity †

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Oct. 21	102.0*	106.0*	105.0*	101.0	103.0	104.0	101.5*	102.0*	101.0*	104.0	99.0	104.0	103.0	102.5
Oct. 28	103.0	108.0	105.0	102.0	103.0	104.0	101.5	103.0	101.0	75.0**	96.5	91.0	101.5	104.0

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.
* Revised.
** Tentative.

Bolivia—RFC Tin Talks Ended

Bolivians want $1.50 per lb, RFC stands at $1.12 . . . No date set for resumption . . . Markets flutter with British election . . . Total allocation set for pig lead—*By R. L. Hatschek.*

Negotiations between Reconstruction Finance Corp. and the tin producers of Bolivia were terminated last week with no agreement being reached. The Bolivians were holding out for $1.50 per lb while RFC refused to go any higher than $1.12, or 9¢ above RFC's resale price.

The South Americans said that their costs averaged $1.33½ per lb and one producers' costs totaled $1.80. They pointed out that the foreign free markets, London and Singapore, were at levels close to a New York equivalent of $1.30.

Both sides seem to have taken firm stands and no date was set for the resumption of talks. Bolivia, by the way, is the source of about a third of the tin used in this country.

Election Jitters—While the London tin market was quiet last Friday because of the election, the prospect of a Conservative victory knocked the bottom out of the Singapore market. The price there dropped 6⅜¢ to a New York equivalent of $1.20¾. Cause for this was the feeling that the Conservative Party would cooperate more closely with the United States in its attempt to bring down world prices.

On Monday the price in Singapore jumped up to a New York equivalent of about $1.25.

Getting Normal—Office of Price Stabilization's action in bringing lead and zinc product prices up to match the new primary metal ceilings has started business rolling again. The nonferrous metals scrap market is also settling down to the new prices. Solder joints and various grades of type metal and dross were revised as well as the other grades containing zinc or lead.

The scrap market, however, is still pretty well muddled up since the OPS ceilings do not necessarily coincide with supply versus demand figures.

Sign Agreement—General Services Administration gets first call on all the aluminum to be produced during the first 5 years of operations of the new Rockdale, Tex., smelter. Aluminum Co. of America and General Services Administration signed the contract last week.

The agreement, similar to others signed for the production of the Wenatchee, Wash., plant and the extension of the Point Comfort, Tex., plant, is for two-thirds of the production and contains a clause stating that Alcoa must sell any metal not taken by GSA to others in pig or ingot form. The rest will go as finished or semi-finished products.

Alcoa expects to have the lignite-powered plant in production late in 1952.

Shipments Dip Further—The brass and bronze industry shipped 3000 tons less in September than it did in August, according to a report from the industry's Defense Council. The total for the month was 22,285 tons and represents a drop of over 11,000 tons from this year's high of 33,817 tons shipped in June. Reason for the downward trend is the poor flow of scrap.

Copper Held Up—Once again deliveries of vitally need copper have been held up by labor difficulties. Added to the long list of strikes in mines, smelters and Chilean docks is the latest—a wildcat dock strike in New York's port. It was estimated last week that the total of copper tied up was 10,000 tons and growing.

Copper, aluminum, lead, tin and zinc have been placed in a new super-scarce category by Defense Production Administration. And copper was cited particularly as being "dangerously short." Molybdenum, nickel, tungsten, cobalt, platinum, columbium and selenium also fall into the critical group.

100 Pct Allocations—Primary pig lead was placed under total allocation when National Production Authority amended M-76 to include imports. The order is effective today. NPA explained that the ever-worsening shortage made the move necessary and cited a few figures. These were the figures: The import rate has dropped from 442,000 tons last year to 175,000 tons this year. October requirements totaled 128,000 tons while available supplies were only 23,000 tons.

The underlying cause, again, is the low U. S. ceiling price with high world demand and high world prices. Some stockpile juggling has already been authorized to ease the shortage.

NONFERROUS METAL PRICES

	Oct. 24	Oct. 25	Oct. 26	Oct. 27	Oct. 29	Oct. 30
Copper, electro, Conn. ...	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered ...	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.03	$1.03	$1.03	....	$1.03	$1.03*
Zinc, East St. Louis	19.50	19.50	19.50	19.50	19.50	19.50
Lead, St. Louis	18.80	18.80	18.80	18.80	18.80	18.80

*Tentative

Note: Quotations are going prices.

Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 26.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 39.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32 in., 53.5¢ to 42¢; ⅜ to 1½ in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63-S-T-5, OD in in.: 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage 0.24 x 28 in., 72 in., $1.379; 96 in., $1.839; 120 in., $2.299; 144 in., $2.759. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in. 65¢; ⅛ in., 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 78¢; 16, 85¢; 18, 93¢; 20, $1.05; 22, $1.27; 24, $1.67. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb., 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb, ½ to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Shot and blocks	..	53½

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	41.68	....	41.28
Copper, h-r	....	37.53	....
Copper, drawn	....	38.78	....
Low brass	39.67	39.36	....
Yellow brass	38.28	37.97	....
Red brass	40.14	39.83	....
Naval brass	43.20	37.26	38.52
Leaded copper	....	41.58	....
Com'l bronze	41.13	40.82	....
Mang. bronze	46.92	40.81	42.37
Phos. bronze	61.07	61.32	....
Muntz metal	41.18	36.74	37.99
Ni silver, 10 pct	49.82	52.04	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	42.00
Beryllium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.00
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.55
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$200
Lead, St. Louis	18.80
Lead, New York	19.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	24.50
Magnesium, sticks, 100 to 500 lb	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$220-$222
Nickel electro, f.o.b. N. Y. warehouse	59.58
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	88.00
Tin, New York	$1.03
Titanium, sponge	$5.00
Zinc, East St. Louis	19.50
Zinc, New York	20.29
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	27.25
No. 120	26.75
No. 123	26.25
80-10-10 ingot	
No. 305	32.25
No. 315	30.25
88-10-2 ingot	
No. 210	40.00
No. 215	38.50
No. 245	33.50
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	30.50

Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	21.2
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy	20.8
ASX-679	20.5

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	18.00
Grade 2—92-95%	17.75
Grade 3—90-92%	17.25
Grade 4—85-90%	16.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33⅜
Flat rolled	38.34
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	26½
Ball anodes	25½
Nickel 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.80
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	67¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20¾
Yellow brass	19½	17⅞
Red brass	20½	19⅝
Comm. bronze	20½	19¾
Mang. bronze	18½	17¾
Brass rod ends	18⅞	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	14.75

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75
Aluminum	
Mixed old cast	9.75
Mixed new clips	11.00
Mixed turnings, dry	9.50
Pots and pans	9.25

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18¾—19¼
No. 2 heavy copper and wire	17¼—17¾
Light copper	16 —16½
New type shell cuttings	16 —16½
Auto radiators (unsweated)	14¼—14⅝
No. 1 composition	18 —18½
No. 1 composition turnings	17¾—18
Unlined red car boxes	16¾—17¼
Cocks and faucets	15½—16
Mixed heavy yellow brass	12 —12½
Old rolled brass	15 —15½
Brass pipe	16 —16½
New soft brass clippings	16 —16½
Brass rod ends	15½—16
No. 1 brass rod turnings	15 —15½

Aluminum

Alum. pistons and struts	6½— 7½
Aluminum crankcases	7½— 8
2S aluminum clippings	10½
Old sheet and utensils	7½— 8
Borings and turnings	5 — 6
Misc. cast aluminum	7½— 8
Dural clips (24S)	10 —11

Zinc

New zinc clippings	13¼—13½
Old zinc	10 —10¼
Zinc routings	6¾— 7
Old die cast scrap	6¾— 7

Nickel and Monel

Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13

Lead

Soft scrap, lead	15¾—16
Battery plates (dry)	10½—11
Batteries, acid free	7 — 7¼

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	85 —90
No. 1 pewter	60 —65
No. 1 auto babbitt	48 —50
Mixed common babbitt	16¼—16½
Solder joints	21 —22
Siphon tops	48 —50
Small foundry type	21 —22
Monotype	18½—19
Lino. and stereotype	17½—18
Electrotype	16 —16½
Hand picked type shells	10 —11
Lino. and stereo. dross	8¾— 9
Electro. dross	7½— 8

Order Defense Dept. Scrap Survey

Munition Board's Small orders military branches to get rid of scrap . . . Eyes are still on mothballed lame duck freighters . . . OPS okays premiums for trolley track recovery.

Battlefield scrap and ship hulks are being surveyed by various Defense Dept. agencies as part of Washington's contribution to the scrap recovery campaign.

Munitions Board Chairman John D. Small has directed military departments to accumulate and dispose of all available non-salvageable iron and steel found on military installations or produced as a result of war or field operations. Some scrap men feel that, despite Mr. Small's good intentions, a productive job will not be done within government agencies because of a thousand miles of red tape.

Efforts to persuade the Maritime Commission to release some mothballed ship hulks into scrap channels have for a long time been unfruitful. But the crisis is on and scrap users are sure the Commission has some lame ducks that cannot possibly be of any future service. This floating inventory should be reexamined.

Navy and Coast Guard are offering beached or sunk vessels as scrap. All the private company has to do is bring them up. This is risky, long-term work and won't ease the immediate crisis.

Statistics show that of all military ferrous scrap being contributed, the Army is turning in 49 pct, the Navy, 38 pct, and Air Force, 13 pct. The Air Force is richer in nonferrous scrap.

Report of the scrap committee which visited Korea, Japan, and South Pacific islands to learn the status of overseas scrap metals may be released by General Services Administration soon.

To make the removal of abandoned trolley tracks economically feasible, OPS will permit, under CPR 34, a service charge to cover actual additional recovery cost. It is estimated that recovery of up to 1,000,000 tons of rail scrap may result.

This service charge will include cost of repaving as well as digging up from the streets. It will vary from project to project but is generally expected to run as high as $20 to $25 per ton.

Pittsburgh — Amendments to the scrap price order brought some complaints. One was that making No. 1 bundles the prime grade gives an advantage to the dealer with a press. Eyebrows also were raised over classification of No. 1 busheling on a par with No. 1 bundles. Some doubt was expressed that the amendments will bring out any large tonnages of scrap.

Chicago—Trade sources believe new ceiling prices will expedite scrap shipments to mills. Dealers holding off shipments of No. 2 bundles in anticipation of a price increase will now resume shipping. Movement of scrap is expected to be stepped up as dealers will save time by not having to segregate various grades. Removal of premiums on foundry steel will direct more scrap to the openhearths.

Philadelphia—Local trade was busy last week clearing up what little No. 1 steel there was before the new price order became effective. It is generally felt that the new order is a step in the right direction but shipments to foundries can be expected to start dwindling. Many people feel that $1 just isn't incentive enough to cut short lengths of steel.

New York—Scrap flow has not responded yet to advantages of new pricing amendment. Some pickup is expected. Truth of the matter is that very little scrap was being held back. Some clarification on preparation charge for No. 1 heavy melting is expected from OPS soon. Foundry grades are still coasting along. Scrap stocks are still anaemic and trouble may come if winter strikes hard.

Detroit — Dealers were busy last week studying the latest price revisions. Those who had hoped to see all scrap grades raised were disappointed, but there has been little reaction from the trade. Cast grades are very weak. Sharp decline in production foundry output plus a general slowing down of automobile die programs is believed to be responsible.

Cleveland—Scrap flow in this district is fairly constant, but some scrap men say it has slowed down. Blast furnace grades remain tight, foundry cast easy. Rail grades are tightening up because roads demand return of some parts. Effects of the new pricing order are not expected for at least another week.

St. Louis—OPS order is expected to stimulate the flow of scrap to this market immediately upon its effective date. Considerable material was said to have been held up in the belief the order would be issued. New order will be of special benefit to bundlers.

Birmingham—New price regulations are causing some confusion among scrap dealers and everyone is trying to get his bearings. Electric furnace users are worried about where they will get their scrap. Dealers say the OPS reduction in electric furnace grades does not leave enough profit to warrant cutting up.

Cincinnati—Armco Steel, now using a 2-shift operation in its scrap preparation yard, hopes for mild winter to keep the scrap coming. Foundries in this area are fairly well off except for the smaller shops. OPS counters claims of non-enforcement on scrap order by saying time of its agents has gone to beef price control. It will now be able to put more men into scrap.

Boston—Just what effect the revised prices will have in this city is still questionable. Immediate response from most dealers was "We don't know yet. We've got to see it work." Now, and until Oct. 30, when new prices become effective, dealers are cleaning out old orders.

Buffalo—Scrap is moving in good volume, with new pricing order expected to help out. Upgrading is expected to be minimized. Allocations elsewhere are still feared.

SCRAP

for your every requirement

LURIA BROTHERS AND COMPANY, INC.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

PLANTS	MAIN OFFICE	OFFICES			
LEBANON, PENNA.	LINCOLN-LIBERTY BLDG.	BIRMINGHAM, ALA.	CHICAGO, ILLINOIS	HOUSTON, TEXAS	PITTSBURGH, PA.
READING, PENNA.	Philadelphia 7, Penna.	Empire Building	100 W. Monroe St.	1114 Texas Av. Bldg.	Oliver Building
DETROIT (ECORSE), MICHIGAN		BOSTON, MASS.	CLEVELAND, OHIO	LEBANON, PENNA.	PUEBLO, COLORADO
MODENA, PENNA.		Statler Building	1022 Midland Bldg.	Luria Building	334 Colorado Bldg.
PITTSBURGH, PENNA.		BUFFALO, N. Y.	DETROIT, MICHIGAN	NEW YORK, N. Y.	READING, PENNA.
ERIE, PENNA.		Genesee Building	2011 Book Building	100 Park Avenue	Luria Building

ST. LOUIS, MISSOURI
2052 Railway Exchange Bldg.

SAN FRANCISCO, CALIFORNIA
Pacific Gas & Elec. Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Berman

Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS, effective Feb. 7, 1951. Shipping point and delivered prices calculated as shown below.)

Switching Charge (Dollars per gross ton) →		$0.99	.75	.53	.65	.75	.51	.75	.75	.75	.51	.75	.70	.76	.83	.65	.26	1.34	.79	.50	.20	.51	.51	.20	.52	.47	.51	.51	.51	.51	.51	.51	.50	.43	.51	.33	.57	.88	.82	.82
Basing Points →		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Coatesville	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles	Portland, Ore.	San Francisco
GRADES	OPS No.																																							
No. 1 bundles	1	$44.00							$44.00					$43.00				$42.50						$42.00					$41.00	$41.15	$40.00	$39.50	$39.00			$38.00	$37.00			
No. 1 busheling	2	44.00							44.00					43.00				42.50						42.00					41.00	41.15	40.00	39.50	39.00			38.00	37.00			
No. 1 heavy melting	3	43.00							43.00					42.00				41.50						41.00					40.00	40.15	39.00	38.50	38.00			37.00	36.00			
No. 2 heavy melting	4	43.00							43.00					42.00				41.50						41.00					40.00	40.15	39.00	38.50	38.00			37.00	36.00			
No. 2 bundles	5	43.00							43.00					42.00				41.50						41.00					40.00	40.15	39.00	38.50	38.00			37.00	36.00			
Machine shop turnings	6	34.00							34.00					33.00				32.50						32.00					31.00	31.15	30.00	29.50	29.00			28.00	27.00			
Mixed borings and turnings	7	38.00							38.00					37.00				36.50						36.00					35.00	35.15	34.00	33.50	33.00			32.00	31.00			
Shoveling turnings	8	38.00							38.00					37.00				36.50						36.00					35.00	35.15	34.00	33.50	33.00			32.00	31.00			
Cast iron borings	10	38.00							38.00					37.00				36.50						36.00					35.00	35.15	34.00	33.50	33.00			32.00	31.00			
No. 1 chemical borings	26	41.00							41.00					40.00				39.50						39.00					38.00	38.15	37.00	36.50	36.00			35.00	34.00			
Forge crops	11	51.50							51.50					50.50				50.00						49.50					48.50	48.65	47.50	47.00	46.50			45.50	44.50	42.00	42.00	42.00
Bar crops and plate	12	49.00							49.00					48.00				47.50						47.00					46.00	46.15	45.00	44.50	44.00			43.00	42.00	40.00	40.00	40.00
Punchings and plate	14	46.50							46.50					45.50				45.00						44.50					43.50	43.65	42.50	42.00	41.50			40.50	39.50	37.50	37.50	37.50
Electric furnace bundles	15	46.00							46.00					45.00				44.50						44.00					43.00	43.15	42.00	41.50	41.00			40.00	39.00	37.00	37.00	37.00
Cut struct., plate, 3 ft and less	16	47.00							47.00					46.00				45.50						45.00					44.00	44.15	43.00	42.50	42.00			41.00	40.00	38.00	38.00	38.00
Cut struct., plate, 2 ft and less	17	49.00							49.00					48.00				47.50						47.00					46.00	46.15	45.00	44.50	44.00			43.00	42.00	40.00	40.00	40.00
Cut struct., plate, 1 ft and less	18	50.00							50.00					49.00				48.50						48.00					47.00	47.15	46.00	45.50	45.00			44.00	43.00	41.00	41.00	41.00
Foundry steel, 2 ft and less	20	44.00							44.00					43.00				42.50						42.00					41.00	41.15	40.00	39.50	39.00			38.00	37.00	36.00	36.00	36.00
Foundry steel, 1 ft and less	21	46.00							46.00					45.00				44.50						44.00					43.00	43.15	42.00	41.50	41.00			40.00	39.00	37.00	37.00	37.00
Heavy trimmings	24	43.00							43.00					42.00				41.50						41.00					40.00	40.15	39.00	38.50	38.00			37.00	36.00	34.00	34.00	34.00
Hard steel, 2 ft and less	30	49.00							49.00					48.00				47.50						47.00					45.00	46.15	45.00	44.50	44.00			43.00	42.00	40.00	40.00	40.00
No. 1 RR heavy melting	RR 1	46.00							46.00					45.00				44.50						44.00					43.00	43.15	42.00	41.50	41.00			40.00	39.00	37.00	37.00	37.00
Scrap rails, random lengths	RR 14	48.00							48.00					47.00				46.50						46.00					45.00	45.15	44.00	43.50	43.00			42.00	41.00	39.00	39.00	39.00
Scrap rails, 3 ft and less	RR 16	51.00							51.00					50.00				49.50						49.00					48.00	48.15	47.00	46.50	46.00			45.00	44.00	42.00	42.00	42.00
Scrap rails, 2 ft and less	RR 17	52.00							52.00					51.00				50.50						50.00					49.00	49.15	48.00	47.50	47.00			46.00	45.00	43.00	43.00	43.00
Scrap rails, 18 in. and less	RR 18	54.00							54.00					53.00				52.50						52.00					51.00	51.15	50.00	49.50	49.00			48.00	47.00	46.00	46.00	46.00
Rerolling rails	RR 15	53.00							53.00					52.00				51.50						51.00					50.00	50.15	49.00	48.50	48.00			47.00	46.00	44.00	44.00	44.00
Uncut tires	RR 20	48.00							48.00					47.00				46.50						46.00					45.00	45.15	44.00	43.50	43.00			42.00	41.00	38.00	38.00	38.00
Cut tires	RR 21	51.00							51.00					50.00				49.50						49.00					48.00	48.15	47.00	46.50	46.00			45.00	44.00	42.00	42.00	42.00
Cut bolsters and side frames	RR 23	49.00							49.00					48.00				47.50						47.00					46.00	46.15	45.00	44.50	44.00			43.00	42.00	40.00	40.00	40.00
RR specialties	RR 24, 28, 29	51.00							51.00					50.00				49.50						49.00					48.00	48.15	47.00	46.50	46.00			45.00	44.00	42.00	42.00	42.00
Solid steel axles	RR 25	58.00							58.00					57.00				56.50						56.00					55.00	55.15	54.00	53.50	53.00			52.00	51.00	49.00	49.00	49.00
No. 3 steel wheels	RR 27	51.00							51.00					50.00				49.50						49.00					48.00	48.15	47.00	46.50	46.00			45.00	44.00	42.00	42.00	42.00
Unassorted	RR 35	40.00							40.00					39.00				38.50						38.00					37.00	37.15	36.00	35.50	35.00			34.00	33.00	31.00	31.00	31.00

Cast Scrap

(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast	1	$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runouts or prepared cupola drops is 75 pct of corresponding grade.

SWITCHING DISTRICTS—These basing points include the indicated switching districts: Pittsburgh; Bessemer, Homestead, Duquesne, Munhall. Cincinnati; Newport. St. Louis; Granite City, East St. Louis, Madison, and Federal, Ill. San Francisco; South San Francisco, Niles, Oakland. Claymont; Chester. Chicago; Gary.

SHIPPING POINT PRICES (Except RR scrap)—for shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is $1.25 per gross ton except: Memphis, 95¢; Great Lakes ports, $1.50, and New England ports, $1.75. Maximum shipping point price on No. 1 bundles (prime grade) in New York City is $36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Cast scrap shipping point prices are given in table.

DELIVERED PRICES (RR scrap) — Ceiling on-line price of a RR operating in a basing point is the top in the highest priced basing point in which the RR operates. For off-line prices, RR's not operating in basing point non-operating RR's, and RR scrap sold by someone other than a RR see text of order, THE IRON AGE, Feb. 8, 1951, p. 137-C and amend 4, CPR 5.

DELIVERED PRICES (Except RR scrap)—Ceiling is the shipping point price plus actual freight charge, tax included. Dock charges, where applicable, are as above.

UNPREPARED SCRAP—Ceiling price is $8 a ton less than prepared base grades (No. 1 heavy & No. 1 RR heavy). Scrap suitable for compressing into No. 1 bundles is $6 less than No. 1 bundles; suitable for compressing into No. 2 bundles, $8 less than No. 2 bundles. For cast material requiring special preparation, price is breakable cast less preparation costs.

COMMISSIONS—Brokers are permitted a maximum of $1 per gross ton commission which must be separate on the bill.

ALLOY PREMIUMS—These alloy extras are permitted: **Nickel**; $1.25 may be added to price of No. 1 heavy for each 0.25 pct nickel between 1 and 5.25 pct. **Molybdenum**; $2 may be added to price of No. 1 heavy for molybdenum over 0.15 pct, $3 for content over 0.65 pct. **Manganese**; $4 may be added to price of No. 1 heavy or No. 1 RR heavy for content over 10 pct if scrap is in sizes over 8 x 12 x 24 in., $14 if less than 8 x 12 x 24 in. Manganese premium applicable only if sold for electric furnace use or on NPA allocation. **Silicon**: electric furnace and foundry grade adjustments are not applicable if silicon content is between 0.5 and 1.75 pct. **Chromium**; $1 may be added if scrap conforms to SAE 52100 analysis. **Multiple Alloys**; if scrap contains two premium alloy elements, total premium may not exceed ceiling premium for any one contained alloy.

RESTRICTIONS ON USE — Ceiling prices on some scrap items may fluctuate with use by consumers. If some scrap is purchased for its established specialized use, the ceiling price set in the order stands. But if some special grades are purchased for other uses, the ceiling price charge shall be the price of the scrap grade being substituted. Restrictions on use are placed on the following grades: Chemical borings, wrought iron and rerolling rails, cupola cast, billet, bloom, and forge crops, Nos. 1 and 2 chemical borings. Ceiling prices on billet, bloom and forge crops, alloy-free turnings, and heavy turnings may be charged only when shipped directly from industrial producer.

See **Amend. 5 to CPR 5** for setting of single price on No. 1 Heavy, No. 2, and No. 2 bundles. No. 1 bundles are made prime grade from which to add or subtract differentials. Amendment also puts dealer to dealer sales under ceilings, permitting a $1 resale margin, and trucking charges may be added only on shipments of prepared scrap.

CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	$ 8.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	6.00
Crushing machine shop turnings	3.00
Bar crops and plate, cast steel, punchings and plate, cut structural and plate, 3 ft and under, foundry steel, 2 ft and under, wrought iron	10.00
Structural, plate scrap, 2 ft and less, foundry steel 1 ft and less	11.00
Structural and plate scrap, 1 ft and less	12.00
Rails, 3 ft & less; cut tires; cut bolsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

Hamilton, Ontario

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	$35.00
No. 1 bundles	35.00
No. 2 bundles	34.50
Mechanical bundles	33.00
Mixed, steel scrap	31.00
Rails, remelting	35.00
Rails, rerolling	38.00
Bushelings	29.50
Bushelings, prepared new factory	33.00
Bushelings, unprepared new factory	28.00
Short steel turnings	28.00
Mixed borings, turnings	28.00
Cast scrap	58.00 to 60.00

The Key to . . .

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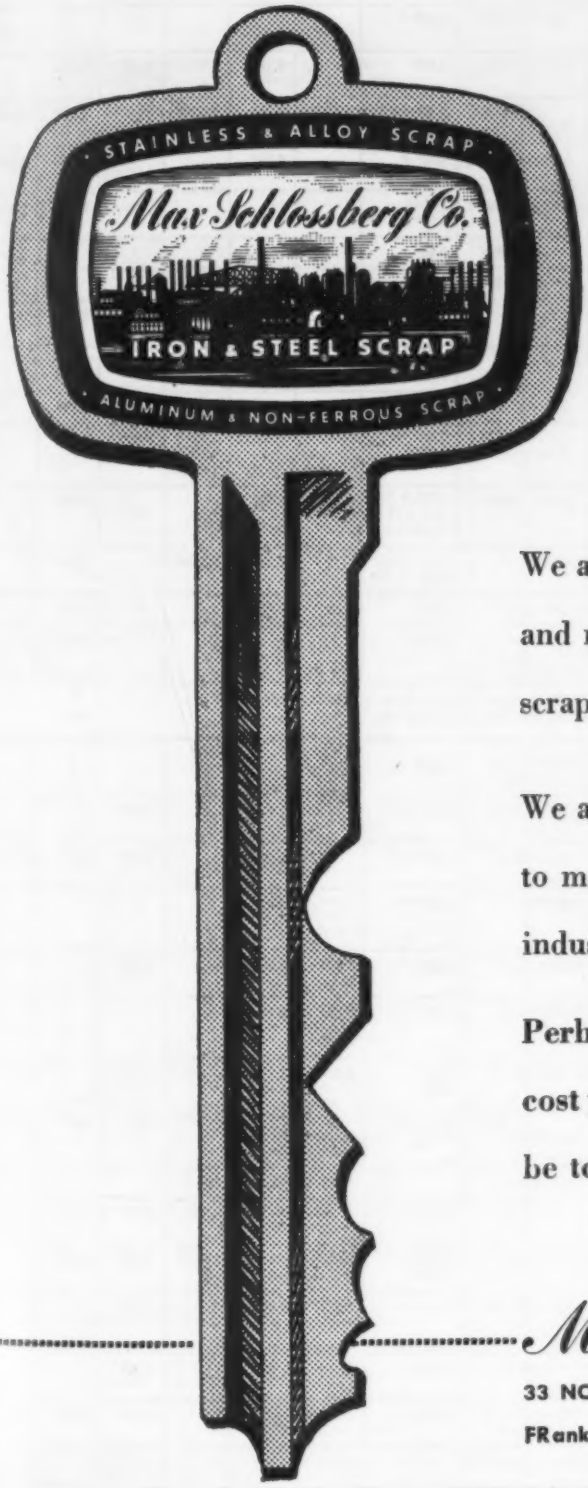

We are brokers and dealers in ferrous and non-ferrous metals—both in scrap and semi-finished form.

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33 NORTH LASALLE STREET, CHICAGO 2, ILL.

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STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$52.00[1]													
Alloy, net ton	$54.00[1,17]													$54.00[31]
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$56.00[1,5]	$56.00[1]	$56.00[1]						$56.00[3]		$56.00[3]			
Carbon forging billets, net ton	$66.00[1,5]	$66.00[1,6]	$66.00[1]	$66.00[4]	$66.00[4]				$66.00[3,4]	$73.00[3,6]	$66.00[3]			$99.00[31]
Alloy, net ton	$70.00[1,17,5]	$70.00[1,4]	$70.00[1,5]		$70.00[4]			$70.00[3]	$70.00[3,4]	$77.00[3,6]	$70.00[3]			$73.00[31]
PIPE SKELP	3.35[1] 3.45[5]						3.35[1,4]							
WIRE RODS	4.10[2] 4.30[18]	4.10[2,4,33]	4.10[6]	4.10[2]			4.10[6]		4.10[35]		4.10[3]	4.20[3]		
SHEETS Hot-rolled (18 ga. & hvr.)	3.60[1,5,9,15] 3.75[28]	3.60[5,33]	3.60[1,5,9]	3.60[4,5]		3.60[7]	3.60[1,4,5] 4.00[13]		3.60[3]	4.00[36]		3.60[3]	4.30[33]	3.60[31] 4.00[47]
Cold-rolled	4.35[1,5,9,15,7]		4.35[1,5,9]	4.35[4,5]		4.35[7]	4.35[4,5]		4.35[3]			4.35[3]	5.05[33]	4.60[31]
Galvanized (10 gage)	4.80[1,9,15]		4.80[1,5]		4.80[4]	4.80[7]	5.50[44] 6.00[54]					4.80[3]	5.50[33]	
Enameling (12 gage)	4.65[1]		4.65[1,5]	4.65[4]		4.65[7]	4.65[5]						5.35[33]	
Long terne (10 gage)	5.20[5,15]		5.20[1]			5.20[7]	6.00[54]							
Hi str. low alloy, h.r.	5.40[1,5] 5.75[5]	5.40[1]	5.40[1,5] 5.90[6]	5.40[4,5]			5.40[1,4,13] 5.90[6]		5.40[3]	5.65[36]		5.40[3]		5.60[31]
Hi str. low alloy, c.r.	6.55[1,5] 6.90[5]		6.55[1,5] 7.05[6]	6.55[4,5]			6.55[4] 7.05[6]		6.55[3]			6.55[3]		7.10[31]
Hi str. low alloy, galv.	7.20[1]											6.75[3]		
STRIP Hot-rolled	3.60[5], 4.00[41,58], 3.75[28] 3.50[5,7]	3.50[5,6]	3.50[1,5,9]			3.50[7]	3.50[1,4,5] 4.00[13]		3.50[3,4]	3.90[36]	3.50[3]	3.50[3]		4.40[47] 3.80[31]
Cold-rolled	4.65[5,7,9] 5.00[28] 5.35[40,63,58]	4.90[5,66]	4.90[6]	4.65[3,5]		4.65[7]	4.65[4,5] 5.25[48,49] 5.35[13,40]		4.65[3]			4.65[3]		4.95[31] 5.45[47] 5.60[54,61]
Hi str. low alloy, h.r.	5.70[5]		5.50[1] 5.30[1,5],80[6]				4.95[4], 5.50[1] 5.40[13],5.80[6]		4.95[3]	5.55[36]		4.95[3]		5.05[31]
Hi str. low alloy, c.r.	7.20[5]			(6.55[3] 6.70[5]			(6.20[4], 6.55[13] 7.05[6]		6.40[3]			6.40[3]		
TINPLATE† Coke, 1.25-lb base box (1.50 lb, add 25¢)	$8.45[1,5,9,15]		$8.45[1,5,9]				$8.45[4]					$8.85[3]		
Electrolytic 0.25, 0.50, 0.75 lb box	0.25 lb base box, $7.15[1,4,5,8,9]; $7.25[3,11]; $7.35[32] 0.50 lb, add 25¢; 0.75 lb add 65¢													
BLACKPLATE, 29 gage Hollowware enameling	5.85[1] 6.15[18]		5.85[1]				5.30[4]							
BARS Carbon steel	3.70[1,5] 3.85[5]	3.70[1,4,33]	3.70[1,4,6,8]	3.70[4]	3.70[4]		3.70[1,4,6]		3.70[3,4]		3.70[3]			3.55[31] 4.80[56]
Reinforcing	3.70[1,5]	3.70[4]	3.70[1,6,8]	3.70[4]			3.70[1,4,6]		3.70[3,9]		3.70[3]	3.70[3]		
Cold-finished	4.55[2,4,5,51,69,71]	4.55[3,33,70]	4.55[4,74,73]	4.55[3]	4.55[4,52]		4.55[5,57]		4.60[70]					4.70[64]
Alloy, hot-rolled	4.30[1,17]	4.30[1,4,33]	4.30[1,6,8]		4.30[4]		4.30[1,6]	4.30[3]	4.30[3,4]		4.30[3]			4.45[31] 4.85[33]
Alloy, cold-drawn	5.40[17,52,69,71,2]	5.40[4,33,69,70,73] 5.45[3]	5.40[4,73,74]		5.40[4,52]		5.40[5,28,57]	5.40[3]	5.40[3]					5.55[64] 5.80[56]
Hi str. low alloy, h.r.	5.55[1,5]		5.55[1,5] 6.05[6]	5.55[4,5]			5.55[1] 6.05[6]	5.55[3]	5.55[3]		5.55[3]			
PLATE Carbon steel	3.70[1,5,15] 4.00[5]	3.70[1,33]	3.70[1,6,8]	3.70[4,5]			3.70[1,4,6] 3.95[13]		3.70[3]	4.15[36]	3.70[3]	3.70[3]	4.40[33]	
Floor plates	4.75[1]	4.75[1]	4.75[6]	4.75[5]						4.75[36]				
Alloy	4.75[1]	4.75[1]	4.75[1]				5.20[13]			5.05[36]	4.75[3]	4.75[3]		
Hi str. low alloy	5.65[1,5]	5.65[1]	5.65[1,5] 6.15[6]	5.65[4,5]			(5.65[4] (5.70[13] (6.15[6]			5.90[36]	5.65[3]	5.65[3]		
SHAPES, Structural	3.65[1,5] 3.90[5]	3.65[1,33]	3.65[1,5]					3.70[3]	3.70[3]		3.70[3]			
Hi str. low alloy	5.50[1,5]	5.50[1]	5.50[1,5] 6.00[6]				6.00[6]	5.50[3]	5.50[3]		5.50[3]			
MANUFACTURERS' WIRE Bright	4.85[2,5] 5.10[18]	4.85[2] 4.33,34		4.85[2]			4.85[6]	Kokomo—4.95[20] 4.85[36]			4.85[3]	4.95[3]	Duluth—4.85[3]	
PILING, Steel Sheet	4.45[1]	4.45[1]	4.45[3]						4.45[3]					

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F—$79.00[10]		INGOTS Carbon forging, net ton
	$82.00[83]		F—$80.00[10]		Alloy, net ton
		$56.00[11]	F—$75.00[10]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$74.00[83]	$66.00[11]	F—$85.00[10] SF, LS, S—$85.00[83]	Geneva—$66.00[16]	Carbon forging billets, net ton
	$78.00[83]		F—$89.00[10] LA—$90.00[83]		Alloy net ton
				Alton—4.40[33] Worcester—4.40[2] Minnequa—4.35[14] Portsmouth—4.30[39]	PIPE SKELP
	4.80[83]	4.10[4-11]	SF—4.80[2], F—4.90[10] LA—4.90[24-83]		WIRE RODS
		3.80[4-11]	SF, LA—4.30[24] F—4.65[10]	Niles—5.25[24], Geneva—3.70[16] Ashland—3.60[7]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.38[11]	SF—5.30[24] F—5.30[10]		Cold-rolled
		4.80[4-11]	SF, LA—5.55[24]	Ashland—4.80[7] Kokomo—5.20[30]	Galvanized (10 gage)
				Ashland—4.65[7]	Enameling (12 gage)
					Long ternes (10 gage)
		8.40[11]	F—8.35[10]		HI str. low alloy, h.r.
			F—7.50[10]		HI str. low alloy, c.r.
					HI str. low alloy, galv.
4.10[83]	4.90[83]	3.80[4-11]	SF, LA—4.25[24-83] F—4.75[10], S—4.50[83]	Alton—3.95[33] Atlanta—4.05[45] Minnequa—4.55[14] Ashland—3.60[7]	STRIP Hot-rolled
			F—5.30[10] LA—6.40[27]	New Haven—5.15[3], 5.85[48] Trenton—6.00[48]	Cold-rolled
		5.30[11]	F—6.20[10] SF, LA—6.05[82] S—6.30[83]		HI str. low alloy, h.r.
			F—8.95[10]		HI str. low alloy, c.r.
		$8.50[11]	SF—9.20[24]		TINPLATE Cokes, 1.25-lb base box (1.50 lb, add 25¢)
					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.20[83]	4.10[83]	3.70[4-11]	SF, LA—4.40[24]	Alton—4.15[33] Atlanta—4.25[45] Minnequa—4.15[14]	BARS Carbon steel
4.30[83]	4.10[83]	3.70[4-11]	SF, S—4.45[82] F—4.40[10], LA—4.40[83]	Atlanta—4.25[45] Minnequa—4.50[14]	Reinforcing
			LA—6.00[4]	Newark—5.00[69] Putnam—5.10[69] Hartford—5.10[4]	Cold-finished
4.80[83]	4.70[83]		LA—5.35[83] F—5.35[10]		Alloy, hot-rolled
				Newark—5.75[69] Worcester—5.75[3] Hartford—5.85[4]	Alloy, cold-drawn
		5.55[11]	F—6.60[10], SF, S—6.30[82] LA—6.25[83]		HI str. low alloy, h.r.
	4.10[83]	3.70[4-11]	F—4.30[10] S—4.60[83]	Claymont—4.15[39] Coatesville—4.15[21] Harrisburg—6.75[25] Minnequa—4.50[14] Geneva—3.70[16]	PLATE Carbon steel
				Harrisburg—6.75[25]	Floor plates
			F—5.70[10]	Coatesville—5.25[21] Claymont—4.85[39]	Alloy
		6.65[11]	F—6.25[10] S—6.50[82]	Geneva—5.85[16]	HI str. low alloy
4.25[83]	4.05[83]	3.60[4] 3.85[11]	SF—4.20[83] F—4.25[10] LA—4.25[24-83] S—4.30[83]	Geneva 3.65[16] Minnequa 4.10[14] Phoenixville—5.25[56]	SHAPES, Structural
		5.50[11]	S—6.10[83] F—6.10[10] SF—6.00[82] LA—6.05[83]	Geneva—5.50[16]	HI str. low alloy
5.45[83]	5.25[83]	4.85[4-11]	SF, LA—5.80[24]	Alton—5.05[33] Atlanta—5.10[45] Worcester—5.15[3] Minnequa—5.10[14] Portsmouth—5.25[39]	MANUFACTURERS' WIRE Bright

† Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128-lb. deduct $2.20 from 1.25-lb coke base box.

Key to Steel Producers

1 U. S. Steel Co., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calstrip Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Claymont Steel Corp., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., Alton, Ill.
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling St. & Carbide, McKeesport
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel, San Fran.
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wycoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 Wickwire Spencer Steel, Buffalo
86 Angell Nail and Chaplet, Cleveland
87 Mid-States Steel & Wire, Crawfordsville, Ind.
88 National Supply, Pittsburgh, Pa.
89 Wheatland Tube Co., Wheatland, Pa.
90 Mercer Tube & Mfg. Co., Sharon, Pa.
91 Woodward Iron Co., Woodward, Ala.
92 Sloss-Sheffield Steel & Iron Co., Birmingham
93 Hanna Furnace Corp., Detroit
94 Interlake Iron Corp., Cleveland
95 Lone Star Steel Co., Dallas
96 Mystic Iron Works, Everett, Mass.
97 Jackson Iron & Steel Co., Jackson, O.
98 Globe Iron Co., Jackson, O.
99 Pittsburgh Coke & Chemical Co., Pittsburgh
100 Shenango Furnace Co., Pittsburgh
101 Tennessee Products & Chem. Corp., Nashville
102 Koppers Co., Inc., Granite City, Ill.
103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
104 Wallingford Steel Co., Wallingford, Conn.
105 Tonawanda Iron Div., N. Tonawanda, N. Y.
106 Pilgrim Drawn Steel Div., Automotive Materials Corp., Plymouth, Mich.

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Oct. 30, 1951	Oct. 23, 1951	Oct. 2, 1951	Oct. 31, 1950
Hot-rolled sheets	3.60	3.60	3.60	3.35
Cold-rolled sheets	4.35	4.35	4.35	4.10
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.40
Hot-rolled strip	3.50	3.50	3.50	3.25
Cold-rolled strip	4.75	4.75	4.75	4.21
Plate	3.70	3.70	3.70	3.50
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip(No. 302)	36.75	36.75	36.75	34.50
Tin and Ternplate: (dollars per base box)				
Tinplate (1.50 lb.) cokes.	$8.70	$8.70	$8.70	$7.50
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	6.60
Special coated mfg. ternes	7.50	7.50	7.50	6.35
Bars and Shapes: (cents per pound)				
Merchant bars	3.70	3.70	3.70	3.45
Cold finished bars	4.55	4.55	4.55	4.15
Alloy bars	4.30	4.30	4.30	3.95
Structural shapes	3.65	3.65	3.65	3.40
Stainless bars (No.302).	31.50	31.50	31.50	30.00
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.85	4.85	4.85	4.50
Rails: (dollars per 100 lb)				
Heavy rails	$3.60	$3.60	$3.60	$3.40
Light rails	4.00	4.00	4.00	3.75
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$56.00	$56.00	$56.00	$54.00
Slabs, rerolling	56.00	56.00	56.00	54.00
Forging billets	66.00	66.00	66.00	63.00
Alloy blooms billets, slabs	70.00	70.00	70.00	66.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	4.10	4.10	4.10	3.85
Skelp	3.35	3.35	3.35	3.15

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	Oct. 30, 1951	Oct. 23, 1951	Oct. 2, 1951	Oct. 1, 1950
No. 2 foundry, del'd Phila.	$57.97	$57.97*	$57.77	$52.77
No. 2, Valley furnace	52.50	52.50	52.50	49.50
No. 2, Southern Cin'ti	55.58	55.58	55.58	52.58
No. 2, Birmingham	48.88	48.88	48.88	45.88
No. 2, foundry, Chicago†	52.50	52.50	52.50	49.50
Basic del'd Philadelphia.	57.09	57.09*	56.92	51.92
Basic, Valley furnace	52.00	52.00	52.00	49.00
Malleable, Chicago†	52.50	52.50	52.50	49.50
Malleable, Valley	52.50	52.50	52.50	49.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese‡	186.25	186.25	186.25	173.40

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.
*Revised.

Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.00*	$43.00*	$44.00*	$43.75
No. 1 steel, Phila. area	41.50*	41.50*	42.50*	38.50
No. 1 steel, Chicago	41.50*	41.50*	42.50*	39.75
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	37.25
Low phos. Young'n	46.50*	46.50*	46.50*	46.25
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	57.75
No. 1 cast, Philadelphia	49.00†	49.00†	49.00†	53.50
No. 1 cast, Chicago	49.00†	49.00†	49.00†	57.00

*Basing Pt. †Shipping Pt.
Not including broker's fee after Feb. 7, 1951.

Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.25
Foundry coke, prompt	17.75	17.75	17.75	16.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.03†	$1.03	$1.03	$1.26
Zinc, East St. Louis	19.50	19.50	19.50	17.50
Lead, St. Louis	18.80	18.80	18.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	51.22
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	42.00	42.00	42.00	32.00

†Tentative.

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive, the use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
Oct. 30, 1951	4.131¢ per lb.	$52.72 per gross ton	$42.00 per gross ton
One week ago	4.131¢ per lb.	52.72 per gross ton	42.00 jer gross ton
One month ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton
One year ago	3.837¢ per lb.	49.36 per gross ton	40.67 per gross ton

	Finished Steel Base Price High		Finished Steel Base Price Low		Pig Iron High		Pig Iron Low		Scrap Steel High		Scrap Steel Low	
1951	4.131¢	Jan. 2	4.131¢	Jan. 2	$52.72	Oct. 9	$52.69	Jan. 2	$47.75	Jan. 30	$42.00	Oct. 23
1950	4.131¢	Dec. 1	3.837¢	Jan. 3	52.69	Dec. 12	45.88	Jan. 3	45.13	Dec. 19	26.25	Jan. 3
1949	3.837¢	Dec. 27	3.3705¢	May 3	46.87	Jan. 18	45.88	Sept. 6	43.00	Jan. 4	19.33	June 28
1948	3.721¢	July 27	3.193¢	Jan. 1	46.91	Oct. 12	39.58	Jan. 6	43.16	July 27	39.75	Mar. 9
1947	3.193¢	July 29	2.848¢	Jan. 1	37.98	Dec. 30	30.14	Jan. 7	42.58	Oct. 28	29.50	May 20
1946	2.848¢	Dec. 31	2.464¢	Jan. 1	30.14	Dec. 10	25.37	Jan. 1	31.17	Dec. 24	19.17	Jan. 1
1945	2.464¢	May 29	2.396¢	Jan. 1	25.37	Oct. 23	23.61	Jan. 2	19.17	Jan. 2	18.92	May 22
1944	2.396¢		2.396¢		$23.61		$23.61		19.17	Jan. 11	15.76	Oct. 24
1943	2.396¢		2.396¢		23.61		23.61		$19.17		$19.17	
1942	2.396¢		2.396¢		23.61		23.61		19.17		19.17	
1941	2.396¢		2.396¢		$23.61	Mar. 20	$23.45	Jan. 2	$22.00	Jan. 7	$19.17	Apr. 10
1940	2.30467¢	Jan. 2	2.24107¢	Apr. 16	23.45	Dec. 23	22.61	Jan. 2	21.83	Dec. 30	16.04	Apr. 9
1939	2.35367¢	Jan. 3	2.26689¢	May 16	22.61	Sept. 19	20.61	Sept. 12	22.50	Oct. 3	14.08	May 16
1938	2.58414¢	Jan. 4	2.27207¢	Oct. 18	23.25	June 21	19.61	July 6	15.00	Nov. 22	11.00	June 7
1937	2.58414¢	Mar. 9	2.32263¢	Jan. 4	32.25	Mar. 9	20.25	Feb. 16	21.92	Mar. 30	12.67	June 9
1936	2.32263¢	Dec. 28	2.05200¢	Mar. 10	19.74	Nov. 24	18.73	Aug. 11	17.75	Dec. 21	12.67	June 8
1932	1.89196¢	July 5	1.83910¢	Mar. 1	14.81	Jan. 5	13.56	Dec. 6	8.50	Jan. 12	6.43	July 6
1929	2.31773¢	May 28	2.26498¢	Oct. 29	18.71	May 14	18.21	Dec. 17	17.58	Jan. 29	14.08	Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Steel Prices

STAINLESS STEELS

Base price, cents per lb, f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs billets rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs die blocks rings	34.00	34.25	38.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled	26.50	26.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS — *Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.
Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4, 5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13 (type 301 add ¼¢); Butler, Pa., 7; Wallingford, Conn., 104.
Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.
Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, N. Y., 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.
Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.
Plates: Brackenridge, Pa., 28 (type 416 add ½¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.
Forged discs, die blocks, rings: Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.
Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 1; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

*ALLEGHENY LUDLUM — Slightly higher on Type 301; slightly lower on others 300 Series.
WASHINGTON STEEL — Slightly lower on 300 Series except where noted.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	Fence Posts	Single Loop Bale Ties	Twisted Barbless Wire	Galv. Barbed Wire	Merch. Wire Ann'ld	Merch. Wire Galv. (1)
	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	¢/lb.	¢/lb.
Alabama City-4	118	128	....	123	....	136	5.70	5.95
Aliquippa, Pa.-5	118	132	....	....	136	140	5.70	6.15
Atlanta-63	121	133	....	126	126	143	5.95	6.40
Bartonville-34	118	130	....	123	143	143	5.70	6.15
Buffalo-85	....	....	....	....	....	....	4.85	....
Cleveland-86	125	....	....	....	....	....	....	....
Cleveland-2	....	....	....	....	....	....	5.70	6.15
Crawfordsville-67	....	132	....	....	....	145	5.95	6.40
Donora, Pa.-2	118	130	....	123	140	140	5.70	6.15
Duluth-2	118	130	....	123	140	140	5.70	6.15
Fairfield, Ala.-11	118	130	....	123	....	140	5.70	6.15
Houston-83	126	138	....	....	....	148	6.10	6.55
Johnstown, Pa.-3	118	130	....	....	140	....	5.70	6.15
Joliet, Ill.-2	118	130	....	123	....	140	5.70	6.15
Kokomo, Ind.-30	120	132	....	125	138	142	5.80	6.05
Los Angeles-62	....	....	....	....	....	....	6.65	....
Kansas City-83	130	....	....	135	....	152	6.30	6.75
Minnequa-14	123	138	130	128	146	146	5.95	6.45
Monessen-18	124	135	....	....	....	145	5.95	6.40
Moline, Ill.-4	....	....	138	....	....	....	....	....
Pittsburg, Cal.-24	137	....	....	147	156	160	6.65	6.90
Portsmouth-26	124	137	....	....	147	147	6.10	6.60
Rankin, Pa.-2	118	130	....	....	140	140	5.70	6.15
S. Chicago, Ill.-4	118	126	140	123	....	138	5.70	5.95
S. San Fran.-14	....	....	....	147	....	160	6.65	7.10
Sparrows Pt.-3	120	....	....	125	142	142	5.80	6.25
Sterling, Ill.-33	118	130	....	123	140	140	5.70	6.15
Struthers, Ohio-6	....	....	....	....	....	....	5.70	6.15
Torrance, Cal.-24	138	....	....	....	....	....	6.65	....
Worcester-2	124	....	....	....	....	....	6.00	6.45
Williamsport, Pa.-51	....	....	150	....	....	....	....	....

Cut Nails, carloads, base, $7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (91), $7.15.
(1) Alabama City and So. Chicago do not include zinc extra.

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago $105.30 to $108.80
6 to 24-in., del'd N.Y. .... 108.50 to 109.50
6 to 24-in., Birmingham 91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less ..... $123.00 to $130.00
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer-1	3.60	4.00	4.70	....	....	....	....	....
Chicago-4	....	....	....	6.15	....	....	....	....
Cleveland-3	....	....	....	....	....	9.35	....	....
Ensley-11	3.60	4.00	....	....	....	....	....	....
Fairfield-11	....	4.00	4.70	6.15	5.60	....	4.50	9.85
Gary-1	3.60	4.00	....	....	....	....	4.50	....
Ind. Harbor-6	3.60	....	4.70	6.15	5.60	....	4.50	....
Johnstown-3	....	4.00	....	....	5.60	....	....	....
Joliet-1	....	4.00	4.70	....	....	....	....	....
Kansas City-83	....	....	....	6.40	....	....	....	9.85
Lackawanna-3	3.60	4.00	4.70	....	....	....	4.50	....
Lebanon-3	....	....	....	6.15	....	9.35	....	9.85
Minnequa-14	3.60	4.50	4.70	6.15	....	....	4.50	9.85
Pittsburgh-3	....	....	....	....	....	9.35	....	....
Pittsburgh-77	....	....	....	....	....	9.35	....	9.85
Pittsburgh-78	....	....	....	....	....	....	....	9.85
Pittsburgh-5	....	....	....	6.15	....	....	....	....
Pittsburgh-24	....	....	....	....	....	....	4.65	....
Seattle-62	....	....	....	6.65	....	....	4.65	....
Steelton-3	3.60	....	4.70	....	....	....	4.50	....
Struthers-6	....	....	....	6.15	....	....	....	....
Torrance-24	....	....	....	....	....	....	4.65	....
Youngstown-4	....	....	....	6.15	....	....	....	....
Cleveland-4	....	....	....	....	....	9.35	....	....

BOILER TUBES

$ Per 100 ft., cut, 10 to 24 ft

F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	22.67	26.66	21.99	25.86
	2½	12	30.48	35.84	29.57	34.78
	3	12	33.90	39.90	32.89	38.70
	3½	11	42.37	49.89	41.10	48.39
	4	10	52.60	61.88	51.03	60.02
National Tube	2	13	21.62	26.48	....	....
	2½	12	29.65	36.32	....	....
	3	12	34.00	41.64	....	....
	3½	11	40.34	49.41	....	....
	4	10	51.21	62.72	....	....
Pittsburgh Steel	2	13	....	27.08	....	....
	2½	12	30.49	37.15	....	....
	3	12	34.95	42.89	....	....
	3½	11	41.48	50.54	....	....
	4	10	52.65	64.16	....	....

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:
70% or more $43.00
60% or less 40.00

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS					
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt.-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0	....	....	....	....	....	....
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0	....	....	....	....	....	....
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
Alton, Ill.-32	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0	....	....	....	....	....	....
Sharon-90	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0	....	....	....	....	....	....
Pittsburgh-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	....	32.5	....	34.5	....
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Wheatland-89	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown-6	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
EXTRA STRONG, PLAIN ENDS																				
Sparrows Pt.-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0	....	....	....	....	....	....
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Oakland-19	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0	....	....	....	....	....	....
Pittsburgh-5	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5	15.5
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.5
Alton, Ill.-32	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0	....	....	....	....	....	....
Sharon-90	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0	....	....	....	....	....	....
Pittsburgh-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	....	33.0	....	36.5	....
Wheeling-15	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Wheatland-89	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0	36.5	17.5

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes, 1¢.
Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 19.50¢.

Miscellaneous Prices

WAREHOUSES

Base price, f.o.b., dollars per 100 lb. *(Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

Cities	Sheets			Strip		Plates	Shapes	Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed
Baltimore	5.80	6.84	7.49[2]–8.07	6.04	.....	5.80	6.14	6.04	6.84–6.89	10.24	10.54	11.89	12.19
Birmingham*	5.60	6.40	6.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....
Boston	6.20	7.00–7.25	7.74–8.29	6.15	8.50[4]	6.48–6.78	6.20	6.05	6.79–6.84	10.25	10.55	11.90–12.00	12.20–12.30
Buffalo	5.60	6.40	7.74–8.09	5.96	.....	6.06	5.80	5.60	6.40–6.45	10.15–10.85	10.45	11.80	11.95–12.10
Chicago	5.60	6.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75
Cincinnati*	5.67	6.44	7.39	5.80	.....	6.19	6.09	5.80	6.61	10.15	10.45	11.80	12.10
Cleveland	5.60	6.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86
Detroit	5.78	6.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06
Houston	7.00	8.25	.....	.....	.....	6.85	6.50	6.65	9.35	10.35	11.25	.....	12.75
Indianapolis, del'd	6.00	6.80	8.15	5.95	.....	6.20	6.10	5.95	6.80	.....	.....	.....	.....
Kansas City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35
Los Angeles	6.35	7.90	8.85	6.40	9.45[6]	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50
Memphis*	6.33–6.38	7.08–7.18	.....	6.33–6.38	.....	6.43–6.02	6.33–6.48	6.08–6.33	7.18–7.32	.....	.....	.....	.....
Milwaukee	5.74	6.54	7.89	5.69–6.59	.....	5.94	5.84	5.69	6.44–6.54	9.94	10.24	11.59	11.89
New Orleans*	5.70	6.59	.....	5.75	7.25	5.95	5.75	5.75	7.30	.....	.....	.....	.....
New York*	5.67–5.97	7.19[5]–7.24[1]	8.14[2]	6.29–6.89	8.63[4]	6.28–6.58	6.10	6.12	6.99	10.65–10.15	10.35–10.45	11.70–11.80	12.10–12.20
Norfolk	6.50[3]	.....	.....	.....	.....	6.50[3]	6.80[3]	6.55[3]	.....	.....	.....	.....	.....
Philadelphia*	5.90	6.80	8.00	6.10	.....	6.05	5.90	6.05	6.86	9.90	10.20	.....	.....
Pittsburgh	5.60	6.40	7.75	5.65–5.95	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75
Portland	6.60–7.55	8.95	8.50–9.10	7.30	.....	6.80	6.95	6.80	.....	.....	12.15	.....	.....
Salt Lake City	7.95	.....	9.70–10.50[2]	8.70–8.75	.....	8.05	6.75–8.30	7.95–8.65	9.00	.....	.....	.....	.....
San Francisco*	6.65	8.05[2]	8.55–8.90[2]	6.60	9.95[6]	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.20–13.50
Seattle	7.05	8.60	9.20	9.05	.....	6.75	6.65	6.75	9.05	.....	.....	.....	.....
St. Louis	5.80–5.85	6.65	8.00	5.80	8.00[4]–8.28	6.13	6.03	5.80	6.55–6.65	10.05	10.35	11.70	12.00
St. Paul*	6.16	6.96	8.31	6.11	.....	6.36	6.26	6.11	6.96	10.36	10.66	12.01	12.31

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 5999 lb.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Blast Furnace Silvery	Low Phos. Charcoal
Bethlehem-3	54.00	54.50	55.00	55.50	.....	.....	.....
Birmingham-4	48.38	48.88	.....	.....	.....	.....	.....
Birmingham-91	48.38	48.88	.....	.....	.....	.....	.....
Birmingham-92	48.38	48.88	.....	.....	.....	.....	.....
Buffalo-4	52.00	52.50	53.00	.....	.....	.....	.....
Buffalo-93	52.00	52.50	53.00	.....	.....	63.75	.....
Chicago-94	52.00	52.50	52.50	53.00	.....	.....	.....
Cleveland-2	52.00	52.50	52.50	53.00	57.00	.....	.....
Cleveland-4	52.00	52.50	52.50	.....	.....	.....	.....
Daingerfield, Tex.-95	48.00	48.50	48.50	.....	.....	.....	.....
Duluth-94	52.00	52.50	52.50	53.00	.....	.....	.....
Erie-94	52.00	52.50	52.50	53.00	.....	.....	.....
Everett, Mass.-96	.....	57.00	57.50	.....	.....	.....	.....
Fontana-19	58.00	58.50	.....	.....	.....	.....	.....
Geneva, Utah-16	52.00	52.50	52.50	53.00	.....	.....	.....
Granite City, Ill.-102	53.90	54.40	54.90	.....	.....	.....	.....
Hubbard, Ohio-6	52.00	52.50	52.50	.....	.....	.....	.....
Ironton, Utah-16	52.00	52.50	.....	.....	.....	.....	.....
Jackson, Ohio-97, 98	.....	.....	.....	.....	.....	62.50	.....
Lyle, Tenn.-101	.....	.....	.....	.....	.....	.....	66.00
Monessen-16	54.00	.....	.....	.....	.....	.....	.....
Neville Island-99	52.00	52.50	52.50	53.00	.....	.....	.....
Pittsburgh-1	52.00	.....	.....	53.00	.....	.....	.....
Sharpsville-100	52.00	52.50	52.50	53.00	.....	.....	.....
Steelton-3	54.00	54.50	55.00	55.50	60.00	.....	.....
Swedeland-26	56.00	56.50	57.00	57.50	.....	.....	.....
Toledo-94	52.00	52.50	52.50	53.00	.....	.....	.....
Troy, N. Y.-4	54.00	54.50	55.00	.....	60.00	.....	.....
Youngstown-6	52.00	52.50	52.50	53.00	.....	.....	.....
N. Tonawanda, N. Y.-105	.....	52.50	53.00	.....	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos. 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content 0.70 pct and over. Silvery iron: Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

REFRACTORIES

Fire Clay Brick

(F.o.b. works; Carloads, Per 1000)

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) $94.60
No. 1 Ohio 88.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 86.00
No. 2 Ohio 79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) 12.70

Silica Brick

Mt. Union, Pa., Ensley, Ala. $94.60
Childs, Pa. 99.00
Hays, Pa. 100.10
Chicago District 104.50
Western Utah and Calif. 111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50
Silica cement, net ton, bulk, Hays, Pa. 18.70
Silica cement, net ton, bulk, Ensley, Ala. 17.60
Silica cement, net ton, bulk, Chicago District 17.60
Silica cement, net ton, bulk, Utah and Calif. 24.70

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester $82.90

Magnesite Brick

Standard, Baltimore $104.90
Chemically bonded, Baltimore 93.00

Grain Magnesite

St. ⅜-in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed $62.70
Domestic, f.o.b. Chewelah, Wash., in bulk 36.30
in sacks 41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ $13.75

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa. ..... $14.50 to $15.00
Foundry, beehive (f.o.b. oven)
Connellsville, Pa. ..... $17.50 to $18.00
Foundry, oven coke
Buffalo, del'd $26.69
Chicago, f.o.b. 23.00
Detroit, f.o.b. 24.00
New England, del'd 25.00
Seaboard, N. J., f.o.b. 22.75
Philadelphia, f.o.b. 22.75
Swedeland, Pa., f.o.b. 22.69
Painesville, Ohio, f.o.b. 24.00
Erie, Pa., f.o.b. 23.50
Cleveland, del'd 25.75
Cincinnati, del'd 25.00
St. Paul, f.o.b. 22.50
St. Louis 25.40
Birmingham, del'd 21.49
Neville Island 23.00

LAKE SUPERIOR ORES

(51.50% *Fe; natural content, delivered lower lake ports*) *Per gross ton*

Old range, bessemer $8.70
Old range, nonbessemer 8.55
Mesabi, bessemer 8.45
Mesabi, nonbessemer 8.30
High phosphorus 8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

C-R SPRING STEEL

F.o.b. Mill Cents Per Lb.	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn.-58	5.35	5.80	7.40	9.35	11.85
Carnegie, Pa.-41	.....	6.80	7.40	9.35	11.85
Cleveland-2	4.65	6.45	7.40	9.35	11.85
Detroit-68	5.60	6.65	7.25	.....	.....
New Castle, Pa.-40	5.35	6.80	7.40	9.35	.....
New Haven, Conn.-68	5.85	6.75	7.35	.....	.....
Sharon, Pa.-13	5.35	6.80	7.40	9.35	11.85
Weirton, W. Va.-9	5.35	6.80	7.40	9.35	11.85
Worcester, Mass.-2	4.95	6.75	7.70	9.65	11.85
Youngstown-48	.....	6.80	7.40	9.35	11.85

—Miscellaneous Prices—

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	13½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in...	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	....

Nuts, Hot Pressed, Cold Punched—Sq

	Pct Off List Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller.	15	28½	15	28½
9/16 in. & ⅝ in.	12	25	6½	21
¾ in. to 1½ in. inclusive	9	23	1	16½
1⅝ in. & larger.	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in.	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger.	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger.	12	25	6½	21

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller.	35	45	28½	39½
9/16 in. & ⅝ in.	29½	40½	22	34
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger.	13	26	8½	23
	Light			
7/16 in. & Smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts — *Pct Off List*

Packaged, steel, plain finished. 48—10
Packaged, plated finish ..... 31—10
Bulk, plain finish** 62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

Base per 100 lb.
½ in. & larger $7.85

Pct Off List
7/16 in. & smaller 36

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

Cap and Set Screws

(In bulk) — *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright 54
¾ in. thru 1 in. up to & including 6 in. 48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat..... 46
¾ in. thru 1 in. up to & including 6 in. 41
Milled studs 35
Flat head cap screws, listed sizes.... 16
Fillister head cap, listed sizes 34
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter 53

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads 21.60
Ton lots 23.75
Less ton lots 25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.
Carloads 27.75
Ton lots 30.05
Less ton lots 31.85

When a touch on a button moves weldments like these into the correct, most convenient position for a downhand pass, you get more arc time, more welding at lower cost. C-F power operated Positioners rotate the work in a full circle at any point in a range of 135° from the horizontal — giving welders a choice of an infinite number of downhand welding positions instantly.

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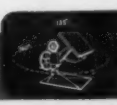

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—Miscellaneous Prices—

ELECTRODES

Cents per lb., f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.35
4, 5	40	21.50
3	40	22.61
2½	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.02
35	65, 110	8.02
30	65, 84, 110	8.02
24	72 to 104	8.02
20	84, 90	8.02
17	60, 72	8.02
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

CLAD STEEL

Base prices, cents per pound, f.o.b., mill

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. (21)	*29.5	
Washgtn, Pa. (29)	*29.5	
Claymont, Del. (29)	*28.00	
Conshohocken, Pa. (26)		*27.50
New Castle, Ind. (55)	*26.50	*25.50
Nickel-carbon		
10 pct Coatesville (21)	32.5	
Inconel-carbon		
10 pct Coatesville (21)	40.5	
Monel-carbon		
10 pct Coatesville (21)	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. (60)		77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	$81.0
6	4	2	6	—	$0.5¢

High-carbon chromium	63.5¢
Oil hardened manganese	35¢
Special carbon	32.5¢
Extra carbon	27¢
Regular carbon	23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd. In East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	15.5¢ to 17.5¢
Electrolytic iron, annealed, 99.5+% Fe	42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	32.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	62.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to $1.43
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 32.25¢
Copper, electrolytic	10.75¢ plus metal value
Copper, reduced	10.00¢ plus metal value
Cadmium, 100-199 lb	95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd.	$3.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	88.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	38.5¢
Solder powder	7.0¢ to 9.0¢ plus met value
Stainless steel, 302	$3.00¢
Stainless steel, 316	$1.10
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$6.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

Miscellaneous Prices—

ELECTRICAL SHEETS

22 Ga. H-R cut lengths

F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom-15		7.25	8.50	9.30	9.85	10.40	11.10
Brackenridge-28		7.25	8.50	9.30	9.85	....	....
Follansbee-63	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Granite City-22		7.95	9.20	....	....	....	....
Ind. Harbor-3	6.75	7.25					
Mansfield-75	7.25	7.75	9.00	9.80	....	....	....
Niles, O.-64	7.05	7.55	....	....	....	....	....
Vandergrift-1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O-4	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville-7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si.)

0.06% C ...	30.50	0.20% C ...	29.50
0.10% C ...	30.00	0.50% C ...	29.25
0.15% C ...	29.75	1.00% C ...	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			32.00
63-66% Cr, 4-6% C, 6-9% Si			32.60

Foundry Ferrochrome

Contract prices, cents per lb of alloy. Noncontract prices add 0.25¢ per lb.

High carbon 8 mesh and down.

62 to 66% Cr, 5 to 7% C, 7 to 10% Si.

Carloads, bulk	23.25
Carloads, packed	24.15
Ton lots, packed	27.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.10% max. C.	$1.14
0.50% max. C.	1.10
9 to 11% C.	1.08

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	23.30
Less ton lots	23.30

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50¢
Less ton lots	17.75¢

Graphidox No. 4

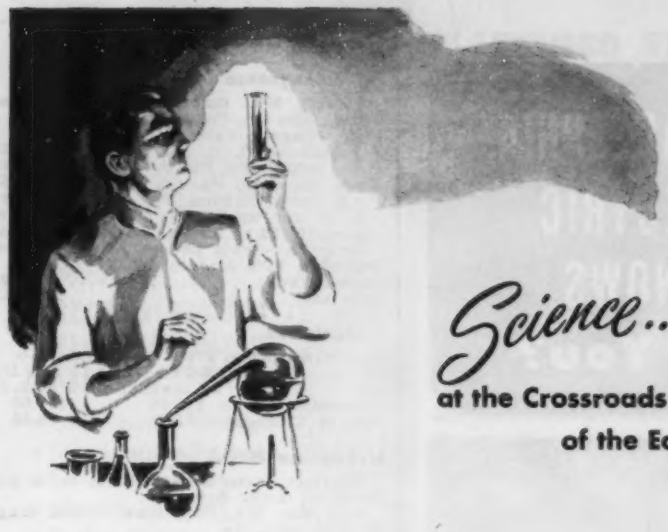
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%. Ca 5 to 7%.

Carload packed	18.00¢
Ton lots to carload packed	19.00¢
Less ton lots	20.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ⅛ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50



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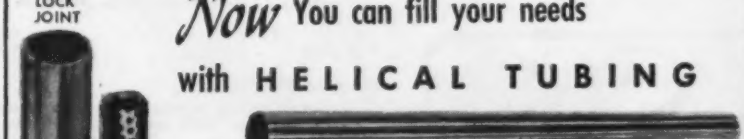

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KSM PRODUCTS INC. ®

ARC WELDING STUDS

—— Ferroalloy Prices ——

Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.	$185
F.o.b. Johnstown, Pa.	$187
F.o.b. Sheridan, Pa.	$185
F.o.b. Etna, Clairton, Pa.	$188

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.95
Ton lots	12.55

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$74.00	$75.00
Pgh. or Chicago	75.00	76.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	34.75
Ton lots	36.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn.....19.15¢

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	9.90
Ton lots	11.55
Briquet, contract basis carlots, bulk delivered, per lb of briquet	11.15
Ton lots	12.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $90.00. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	21.70
97% Si, 1% Fe	22.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carload, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90-95% Si			17.50

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd. Mn 85-90%.

	Carloads	Ton	Less
0.7% max. C, 0.06% P, 90% Mn	26.25	28.10	29.30
0.07% max. C	25.75	27.60	28.80
0.15% max. C	25.25	27.10	28.30
0.30% max. C	24.75	26.60	27.80
0.50% max. C	24.25	26.10	27.30
4.75% max. C, 7.00% max. Si	21.25	23.10	24.30

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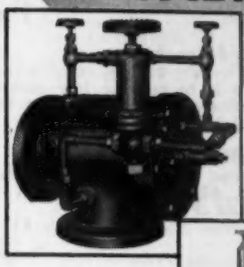
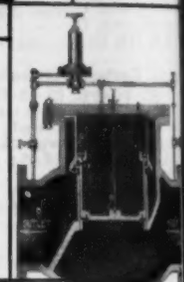
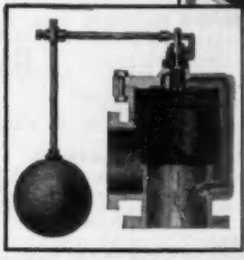


G-A Surge Relief Valve. Bulletin W-2 sent on request.



G-A Water Pressure Reducing Valve. Bulletin W-3 contains the technical information you want.



G-A Cold Water Float Valve. Bulletin W-5 will be of interest to you.

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2096 KEENAN BUILDING PITTSBURGH 22, PA.

Ferroalloy Prices

Silfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	9.90¢
Ton lots	11.30¢
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.15
Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.	
Ton lots	$4.90
Less ton lots	4.95
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta	$3.75
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.32
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	$1.35
Ferrotitanium, 25%, low carbon, 0.10% C max. f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	$1.50
Less ton lots	1.55
Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	$177.00
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$5.00
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25
Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa.	$1.12
Elmanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢
Vanadium pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5	$1.28
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15% contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	7.00¢
Boron Agents	
Contract prices per lb of alloy, del.	
Borosil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B	$5.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, Ti, 15-21% B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound	10.00¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	$1.20
F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	$1.00
No. 6	68¢
No. 79	50¢
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	
Ton lots	$1.46
Less ton lots	1.57
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcax, contract basis, delivered.	
Ton lots	45.00¢

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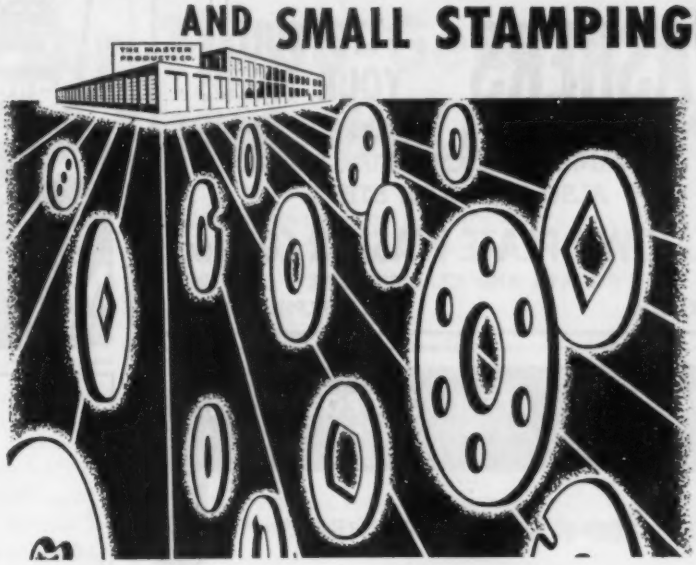

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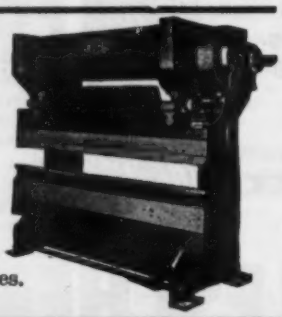

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